

A Training Program Based on Educational Design in Light of the Training needs to Develop some Technological Skills among School Principals

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Abstract

The main objective of this study was to evaluate the effects of implementing an educational design-based training program on the improvement of technical skills among school principals in Abha City. A research investigation was undertaken on a group of principals who were associated with secondary schools situated in Abha City. The aim of the study was to assess the potential influence of the training program on principals' proficiency in many domains of technology, encompassing analysis, design, production, usage, management, assessment, and follow-up and development abilities. The study lasted for a period of one month. The study consisted of a cohort of 24 principals, with an equal distribution of 12 persons in both the experimental and control groups. The findings of the study demonstrated a statistically significant improvement in post-test scores related to the acquisition of technological skills, specifically in the domains of analysis, design, production, usage, management, evaluation, and follow-up and development, for the experimental group as compared to the control group. No statistically significant differences were found in the scores of the experimental group and the control group in terms of their technological skills, specifically in the areas of analysis skills, design skills, production skills, usage skills, management skills, evaluation skills, and follow-up and development skills, both immediately after the intervention and during the subsequent follow-up assessment.

Keywords: *training program based on educational design, technological skills, Secondary School principals, Abha City.*

Introduction

The human element serves as a fundamental cornerstone in the development of renaissance and civilization inside any nation or society. It plays a pivotal role as the principal catalyst and proficient constructor of human civilization across its various dimensions (Silva, 2021). Hence, the enhancement of human wealth emerges as a primary concern for nations and individuals alike, prompting a concerted commitment to its cultivation through the allocation of resources and endeavors toward the advancement of education and the nurturing of human potential. Equipping him with the necessary skills and knowledge to fulfill his responsibilities and advance within the hierarchy of human society, ensures his preparedness for future endeavors (Nosirova, 2020).

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Education in the present era has transcended its status as a narrow technical matter, limited to a select set of experts within the area or individuals directly engaged in the educational process (Raman & Thannimalai, 2019). Education has emerged as a pervasive concern within society, as it plays a significant role in shaping individuals' personalities and is instrumental in cultivating human beings and molding their intellects. Consequently, the modernization of education and the endeavor to enhance its systems and outcomes to meet high standards of quality, innovation, and creativity have become paramount priorities for educational professionals engaged in research and innovation (Banoğlu et al., 2022). The attainment of this objective necessitates enhancing the caliber of education and devoting greater consideration to the individual upon whom the teaching profession is centered. This entails implementing and illuminating the aforementioned objectives, specifically focusing on the teacher and the administration. In order to ensure the provision of quality education, it has become imperative to effectively recruit and deploy highly competent individuals for teaching and administrative roles (Gonzales, 2020). Furthermore, it is essential to offer a comprehensive curriculum to adequately prepare prospective educators, followed by continuous opportunities for professional development throughout their careers. Hence, it is imperative to undertake a comprehensive reorientation process aimed at equipping educators. It is imperative to ensure that teachers are equipped with the requisite knowledge and abilities to effectively address the additional responsibilities imposed upon them (Grad, 2020). There is a need to enhance and elevate the level of teachers' preparation in order to align with the evolving role they play, so enabling them to effectively tackle the challenges present in modern education (Rodrigues et al., 2021).

The educational and pedagogical process is a comprehensive entity comprising various components, and managers constitute one of these components that exert an influence on it. Hence, the effective preparation and ongoing training of managers constitute a fundamental prerequisite for the attainment of educational objectives (Bakhsh et al., 2018). This is due to the inherent futility of depending on inept managers within the realm of quality education. The field of education necessitates a scientific discipline that can effectively manage and organize the various components of the educational process, while also enhancing its performance to ensure the attainment of desired objectives (Oikonomidou & Konstantinidis, 2020). This responsibility is fulfilled by the discipline of "educational technology," which employs a systems approach in educational contexts. Through the utilization of both human and non-human resources, and drawing upon research findings in the field of education and learning, educational technology aims to plan, implement, and evaluate educational endeavors with the ultimate aim of achieving educational goals (Apsorn et al., 2019).

Instructional design plays a crucial role in the realm of technology, serving as a pivotal stage in the process of technological advancement inside organizational contexts. The method necessitates a comprehensive understanding of knowledge and the practical application of technological sciences (Thannimalai & Raman, 2018). The technological designer must possess a comprehensive understanding and expertise in the applied scientific knowledge relevant to their field of work. Additionally, they must possess a thorough awareness of the necessary sources and resources required for the development of their designs. Furthermore, instructional design serves as the fundamental component of educational technology (Garcia et al., 2019). The training and preparation of principals are integral components within the field of educational technology and educational design. These processes aim to enhance the growth of all aspects of the educational system and facilitate the achievement of its objectives. Training is a significant and essential process within the realm of continuous professional development across various occupations and specializations (Uğur & Koç, 2019). Its purpose is to update knowledge, enhance performance, cultivate positive behavioral attributes, refine attitudes, and foster a stronger sense of loyalty towards the employing organization. For training to effectively yield desired outcomes and goals, it is imperative that it adheres to the requisite

conditions that govern the scientific and practical aspects of the training process (Cansoy et al., 2019). Numerous considerations must be taken into account by training programs, commencing with the identification of training needs and the selection of appropriate models for the design and development of said programs. Additionally, careful attention should be given to all constituent elements of the training programs and their organization in accordance with established scientific protocols (Alsaleh, 2020). Therefore, the study aims to identify the training program based on educational design in light of the training needs to develop some technological skills among school principals of the Secondary School in Abha City.

Research Questions

The objective of this study was to furnish answers to the subsequent inquiries.

1. Are there statistically significant differences between the scores of the experimental group and the control group after applying the training program based on educational design in light of the training needs to develop some technological skills among school principals in Abha City?
2. Are there statistically significant differences between the scores of the experimental group before and after applying the training program based on educational design in light of the training needs to develop some technological skills among school principals in Abha City?
3. Are there statistically significant differences between the scores of the experimental group in the post-application and follow-up application on the technological skills among school principals in Abha City?

Literature Review

In recent years, the field of educational technology has gained prominence as a scientific discipline and systematic approach that seeks to enhance and address educational practices. It involves the systematic management and development of the various components of the educational process, encompassing both tangible resources and human factors (Nosirova, 2020). Educational technology is a systematic strategy utilized in educational contexts to strategize, execute, and assess educational endeavors. This approach incorporates both human and non-human resources and is informed by research in the field of education and learning. Its ultimate aim is to accomplish educational objectives (Mansur, 2020). Instructional design is widely recognized as the primary domain within the field of educational technology. It is grounded in a range of scientific concepts and principles, with particular emphasis on general systems theory (Mustafayevna, 2021). This theoretical framework perceives education as a holistic system, necessitating the adoption of a systems approach in the design of instructional methods, learning materials, lessons, courses, curricula, and the overall educational process (Ashour & Al-Khatib, 2018).

The historical roots of incorporating design principles into the educational learning process can be traced back to extensive research conducted in the domains of psychology and education. This research has yielded a vast wealth of knowledge and skills that are essential for the development of effective educational strategies and techniques (Khattab & Sharman, 2018). Consequently, it has given rise to a range of theories, including procedural, cognitive, and humanistic theories. The primary objective of these studies was to elucidate the intricacies of the learning process and put forth several models of education, such as programmed education, individualized education in terms of its methodologies, and mastery-based learning. Consequently, these endeavors contributed to

the formulation and advancement of the notion of educational design (Amayra & Ashour, 2020).

Numerous definitions of educational design exist, due to its foundation and development being rooted in various concepts and principles across multiple disciplines. One of the most significant frameworks is general systems theory, which perceives the educational process as a system (Al-Nawaji, 2020). The system can be understood as a comprehensive entity, whether it is tangible or abstract, that possesses the ability to self-develop. It is comprised of sequential, interacting, and overlapping pieces or subunits that function collectively to accomplish the purposes of the system (Al-Maliki, 2021). According to Saadeh and Hamza (2022), the concept entails the identification and creation of environmental variables that serve as motivators for learners to modify their behavior. According to ALDhuhli et al. (2021), educational science encompasses the study and application of teaching methods, with the aim of comprehending, enhancing, and implementing effective instructional approaches. It involves the systematic determination of the most suitable educational methods to facilitate the acquisition of knowledge and skills within a particular subject, society, and target audience of learners.

The significance of educational design is underscored by its numerous advantages in enhancing the various components and stages of the educational process. It aims to integrate theoretical knowledge and findings from scientific research to create a more cohesive, structured, and disciplined educational experience (Silva, 2021). By prioritizing continuous development and improvement, educational design incorporates contemporary advancements, ultimately resulting in an elevation of the educational system. The proficiency levels of individuals who are the focus of the educational system, encompassing many domains and educational stages, are being discussed. Instructional design encompasses a set of processes that are seen most suitable for facilitating the educational process (Nosirova, 2020). It involves the organization of many components in a coherent and rational sequence, while perceiving the process as a unified system comprising multiple elements that collaborate towards the attainment of a predetermined objective. Hence, it is imperative for educational design processes to incorporate models that elucidate the interconnections among their constituents, facilitate comprehension and interpretation, and facilitate the identification of novel processes and relationships (Raman & Thannimalai, 2019). Consequently, it becomes necessary to elucidate these models by providing a comprehensive overview, examining both Arab and foreign models, and comprehending the constituents, objectives, and potential benefits associated with each model (Banoğlu et al., 2022).

The term "technology" has its origins in the Greek language, specifically derived from the word "Techne." In Greek, "Techne" refers to a quality, craft, or skill. Additionally, the word "Logoy" in Greek encompasses the meanings of science, art, or study. Consequently, when combined, the term "technology" can be understood as denoting the science of skills (Gonzales, 2020). The concept of technology has been historically linked to the realm of industry for a period of around 150 years prior to its integration into the field of education. The concept of technology has been characterized by several meanings. According to the definition provided by Grad (2020) the discipline under consideration pertains to the systematic application of research and theories, as well as the utilization of human and non-human components within a particular domain. Its primary objective is to address the challenges within this domain, devise suitable practical solutions, advance their development, implement them, oversee their management, and assess their effectiveness in attaining specific objectives. According to Rodrigues et al. (2021), the field of study referred to as applied science focuses on the practical application of scientific knowledge in order to meet the essential needs and enhance the overall well-being of humanity.

It can be argued that technology has emerged as a significant scientific and humanitarian discipline, playing a crucial role in advancing human civilization as a whole and

benefiting individuals on a personal level (Bakhsh et al., 2018). Consequently, it is imperative to prioritize all aspects related to technology, including the cultivation of its various competencies across different domains, fostering its proficiency among individuals from all segments of society, regardless of age or academic specialization, and promoting its widespread adoption in all geographical locations (Oikonomidou & Konstantinidis, 2020). Technology possesses unique attributes that pertain to its operational procedures, physical components, and intellectual creations. These attributes encompass a multitude of significances that are intricately intertwined with human existence and the essence of being human. Privacy is a fundamental aspect of this autonomous discipline, which assumes numerous crucial functions (Apsorn et al., 2019). By virtue of its extensive scope, adaptability, and rigorous organization, this endeavor effectively attains the objectives of mankind by enhancing its capacities and regulating various processes. The ongoing process of growth and interaction between the material and intellectual aspects of modern civilizations has been present from the inception of humanity and has persisted throughout the many phases of human civilization throughout different time periods (Thannimalai & Raman, 2018) .

Educational technology skills are categorized according to the various procedures and components within the discipline, resulting in the following classification:

- **Analysis skills:** These skills include all analytical skills, which are based on how to list and divide the content or product into small parts that can be worked on more accurately, and the theoretical aspect dominates these skills (Garcia et al., 2019).
- **Design skills:** These skills are considered the most commonly used in the fields of experimental research and others. Examples of these skills include: designing educational websites, designing presentations, and designing learning entities (Uğur & Koç, 2019).
- **Production skills:** These are practical skills that give us an educational or pedagogical product, as an educational method or material (Cansoy et al., 2019).
- **Usage skills:** It is considered one of the most important educational technology skills, as its goal is to employ all available technologies and techniques in order to serve the educational process, and to facilitate the implementation process, whether for the teacher, the learner, or the administration (Alsaleh, 2020).
- **Management skills:** A successful manager is known for his ability to manage the situation or organization in which he works, so these skills are not limited to directors of educational institutions only, but also include the teacher, as the teacher is the manager of his class, and the manager of the entire educational process (Nosirova, 2020).
- **Evaluation skills:** Many may think that evaluation is just a procedure done to judge the extent to which the desired goals have been achieved or not, whereas, like other previous stages, it is considered a skill in which creativity can be achieved (Mansur, 2020).
- **Follow-up and development skills:** The matter does not end with the evaluation, but rather we begin after the evaluation, as we must have skills for follow-up and development to know the shortcomings to address them, and the strengths to further activate their role (Mustafayevna, 2021).

The significance of technology is progressively growing as individuals engage with technological gadgets, software, and technical applications, so establishing it as a crucial domain. Moreover, numerous nations heavily depend on education as a fundamental pillar of their societal development. Therefore, it can be argued that technical leadership, characterized by simpler and more affordable technology, may be more effective in achieving the desired outcome compared to complex technology that comes with a higher price (Ashour & Al-Khatib, 2018). In addition, technological leadership plays a

significant role in the reduction of operating costs within institutions. This is evident in both administrative and production tasks, as it facilitates effective communication among employees and beneficiaries, enables efficient information exchange, and streamlines the acquisition of essential data for decision-making and goal evaluation by the institution (Khattab & Sharman, 2018).

Previous Studies

In their research, Khattab and Sharman (2018) conducted a study focused on technological leadership and education sciences inside secondary schools located in Amman. The study sample comprised 370 male and female instructors who were selected using a stratified random sampling procedure from both government and private secondary schools. The study employed two tools to assess the extent of technical leadership among secondary school principals in Amman, the capital city. The first tool was utilized to gauge the level of technological leadership practiced by these principals, while the second tool was employed to measure the degree of change leadership exhibited by them. The confirmation of the validity and reliability of the two tools was established. One of the key findings of the study pertains to the extent of technical leadership exhibited by secondary school administrators, as perceived by teachers in the capital city of Amman. This extent was determined to be of moderate nature. The level of proficiency exhibited by secondary school administrators in Amman, the capital city, in effectively leading change inside their schools, as perceived by teachers, was found to be quite high.

The study conducted by Amayreh and Ashour (2020) aimed to investigate the extent to which transformational leadership is practiced by school principals in the Irbid District. Additionally, the researchers explored the potential relationship between transformational leadership and decision-making effectiveness, as perceived by teachers. The objective of this study was to assess the extent to which school principals in the Irbid district exhibit transformational leadership behaviors and examine the potential correlation between these behaviors and teachers' perceptions of decision-making effectiveness. The study sample comprised a total of 253 male and female instructors at the basic stage, as well as 193 male and female teachers at the secondary stage. These teachers were selected randomly from government schools associated with the Irbid Education Directorate. The study employed the descriptive survey approach to accomplish its objective, utilizing the transformational leadership questionnaire and the decision-making effectiveness questionnaire. The findings of the survey indicated that, according to the perspective of teachers, the level of transformational leadership exhibited by school principals in the Irbid Education Directorate was moderate on average. The findings also indicated that, according to the perspective of teachers, the level of efficacy in decision-making among school principals in the Irbid district was moderate on average. The findings of the study also indicated a significant and favorable correlation between the implementation of transformational leadership by the principals of Irbid Education Schools and the efficacy of decision-making. Based on the findings, recommendations were formulated.

The objective of Al-Nawaji's (2020) study was to assess the extent to which government school principals engage in technology leadership and examine its correlation with the amount of administrative communication as seen by the principals. The study employed a descriptive correlative methodology, utilizing a questionnaire as the primary tool for data collection. The study's sample comprised 300 male and female teachers who were linked with the public schools in Ain Al-Basha District. The findings of the study revealed the extent to which government school administrators in the Ain Al-Basha District engage in technical leadership, as perceived by teachers. The degree of administrative communication reached a moderate level. Furthermore, the findings indicated that there were no statistically significant variations in the estimations of the individuals within the sample based on the variables of gender, experience, and academic degree.

The study conducted by Al-Maliki (2021) focused on assessing the extent to which technological leadership has been implemented in secondary schools in Jeddah, specifically in response to the challenges posed by the Corona pandemic. Additionally, the study aimed to determine the teachers' perspectives on the level of technological leadership implementation in secondary schools in Jeddah during the Corona pandemic. The researcher opted for the descriptive methodology due to its alignment with the nature of the current study, which aimed to gather the perspectives of secondary school teachers in Jeddah regarding the extent to which technological leadership has been implemented in their schools during the Corona pandemic. The sample size consisted of 738 participants. In order to gather data, the researchers developed a questionnaire that was generated in an electronic format to streamline the administration procedure. The research findings indicated that the level of implementation of technological leadership in secondary schools in Jeddah during the Corona pandemic was moderate. The order of priority, based on the average scores, was as follows: productivity and professional practice, assessment and evaluation, educational learning, social, legal, and ethical considerations, support, management, and operations, and finally, leadership and vision. The study also revealed statistically significant disparities in the implementation of technological leadership during the COVID-19 epidemic, with gender favoring males and qualification favoring individuals with doctoral degrees. Moreover, it is recommended to prioritize individuals with a minimum of 10 years of service, and to prioritize government buildings above other types of structures.

Saadeh and Hamza (2022) investigated the extent of technological leadership practices exhibited by principals in basic schools within the Amman District, specifically focusing on the perspective of teachers, during the COVID-19 pandemic. The objective of this study was to assess the level of technology leadership implementation among principals of elementary schools in the Amman district, as seen by teachers, during the COVID-19 epidemic. The study sample comprised 406 male and female teachers, selected by the basic random approach. The questionnaire was designed and included of 40 paragraphs that were dispersed over five domains pertaining to technical leadership. One significant outcome of the study was the high level of technological leadership exhibited by primary school principals in the Amman district during the COVID-19 epidemic, as perceived by teachers. This was evident across all categories of the questionnaire. The study's findings revealed statistically significant disparities attributed to the gender variable, favoring females, as well as the educational qualification variable, favoring individuals with a bachelor's degree or below. The findings of the study also indicated that there were no statistically significant disparities in the mean estimates of the participants regarding the overall extent of the scale, attributable to variations in the years of experience variable.

Methodology

The current investigation employed an experimental methodology, which involves analyzing a current phenomenon through the manipulation of one or more variables (referred to as the independent variable) and assessing the subsequent effects on the dependent variable. The researcher executed the training program by applying instructional design principles and a conventional methodology to evaluate its effects on the chosen study participants. The participants were divided into two discrete cohorts: an experimental cohort was assigned to receive an intervention grounded in the principles of educational design, while the control cohort was assigned to receive the standard approach.

Population and Sample

The participants for the study were chosen by a random selection technique. The study utilized data from two classrooms, of which one received experimental treatment and was

comprised of twelve principals, while the other was designated as the control group and also contained twelve principals.

Research Tools

The study's aims were achieved through the utilization of two unique research tools.

1. The administrative plan, as outlined in the training program, is a strategic framework that delineates the organizational structure, processes, and procedures necessary for the management and coordination of administrative tasks inside an institution or company. This plan serves as a blueprint for ensuring efficient allocation of resources, streamlining communication channels, and optimizing workflow to achieve organizational goals. The study was focused on a particular domain of inquiry, specifically the acquisition of technological competencies by secondary school principals. The current study was designed with the objective of being conducted in the forthcoming academic year of 2022/2023. The investigator compiled a set of thirty preliminary behavioral objectives through a thorough analysis of the subject matter and overarching goals associated with the areas being studied in the experiment. Multiple components constitute the framework: recalling, comprehending, implementing, analyzing, synthesizing, and assessing. To determine the accuracy and comprehensiveness of the data, it was evaluated by a panel comprised of specialists and professionals. In consideration of the received feedback, revisions were made to the specific objectives, with the overall number of objectives maintained at 30. The administrative strategies devised by the study groups consist of the experimental group undergoing a training program bundle implementation, while the control group continues to utilize a standard approach. Numerous exemplars were presented to the council of experts specializing in the domain of teaching techniques. The objective of this endeavor was to evaluate their appropriateness with respect to the subject matter and the predetermined behavioral standards. Following the evaluation provided by the specialists, certain paragraphs underwent additional revisions, ultimately resulting in their final version. In total, 25 administrative plans were implemented in both groups, with an equivalent allocation of these plans between the two methodologies. Specifically, fourteen plans incorporated a training program, while the remaining fourteen plans maintained a traditional approach.

2. The research was conducted to assess the impact of the instructional materials used in the experiment on the enhancement of technological abilities among secondary school principals. The domain of technological skills covers a variety of competencies, such as the capacity to analyze, design, produce, utilize, manage, evaluate, and engage in follow-up and development activities. The test components were meticulously designed to ensure a precise reflection of its intended purpose and adherence to the procedural rules for evaluating technological skills as outlined in current academic literature. The test items were designed in alignment with the prescribed training program, employing the widely employed multiple-choice format. The selection of items was based on the anticipated level of technological proficiency required for secondary school principals. The collection of inquiries consists of an introductory statement supported by four alternative options, requiring administrators to choose the correct one. The assessment covers a total of 35 items.

Tool Validity and Reliability

Two methodologies were employed to evaluate the reliability of the tool.

1. The assessment of the tool's validity entails its submission to a tribunal of ten arbitrators for evaluation, subsequent to which a minimum acceptance rate criterion of 80% is established.

2. A group consisting of ten educators conducted an evaluation to investigate the degree to which it demonstrates discriminant validity. The discriminant validity of the

coefficients was determined by assessing the statistical significance using observed (F) values. These values were recorded as 3.50, 3.75, 3.90, 4.10, 4.20, 4.60, and 4.80.

The researchers employed Cronbach's alpha formula to calculate the internal consistency of the tool. The tool exhibited a significant degree of reliability overall, as shown by a coefficient of (0.883). In addition, it is important to highlight that the reliability coefficients associated with each of the seven qualities demonstrate varying levels of variance, ranging from 0.783 to 0.894.

Data Analysis

The test findings' mean and standard deviation were calculated when data collection was completed. The effect size, measured with an Eta square, indicates how much of an influence the training program had on improving participants' technological skills. Wilcoxon's test and the Z-value were used as statistical tools to shed light on the differences found between the two samples.

Results and Discussion

Table 1 illustrates that prior to the introduction of the training program, the technological skills of both the experimental and control groups were similar.

Table 1: Pre-Measurement

Skills	Group	N	M/R	S/R	U	Z	P
Analysis skills	Experimenta	12	29.30	351.60	37.00	10.9	0.220
	l	12	30.80	369.60			
	Control						
Design skills	Experimenta	12	30.30	363.60	40.00	10.1	0.240
	l	12	29.50	354.00			
	Control						
Production skills	Experimenta	12	28.30	339.60	32.00	11.3	0.180
	l	12	28.50	342.00			
	Control						
Usage skills	Experimenta	12	29.40	352.80	37.00	10.9	0.225
	l	12	30.90	370.80			
	Control						
Management skills	Experimenta	12	30.40	364.80	42.00	10.1	0.244
	l	12	29.60	355.20			
	Control						
Evaluation skills	Experimenta	12	28.40	340.80	34.00	11.3	0.185
	l	12	28.60	343.20			
	Control						
Follow-up and development skills	Experimenta	12	28.50	342.00	34.00	11.3	0.182
	l	12	28.60	343.20			
	Control						
Total	Experimenta	12	29.20	350.40	36.00	10.8	0.235
	l	12	29.50	354.00			
	Control						

According to the data provided in Table 1, there was no statistically significant distinction found between the two groups in relation to the average scores of principals' pre-test performance in diverse technological competencies, including analysis skills, design skills, production skills, usage skills, management skills, evaluation skills, and Follow-up and development skills.

In order to address the first question, which posited "Are there statistically significant differences between the scores of the experimental group and the control group after applying the training program based on educational design in light of the training needs to develop some technological skills among school principals in Abha City?". The aforementioned table illustrates the attained outcomes.

Table 2: Post-Measurement

Skills	Group	N	M/R	S/R	U	Z	P
Analysis skills	Experimental	12	29.10	349.20	342.0	0.80	0.000
	Control	12	23.00	276.00	0	0	
Design skills	Experimental	12	28.50	342.00	360.0	0.69	0.000
	Control	12	20.00	240.00	0	0	
Production skills	Experimental	12	29.50	354.00	335.0	0.85	0.000
	Control	12	23.20	274.40	0	0	
Usage skills	Experimental	12	29.10	349.20	342.0	0.80	0.000
	Control	12	23.00	276.00	0	0	
Management skills	Experimental	12	28.60	343.20	360.0	0.69	0.000
	Control	12	20.10	201.00	0	0	
Evaluation skills	Experimental	12	29.60	355.20	337.0	0.85	0.000
	Control	12	23.30	279.60	0	0	
Follow-up and development skills	Experimental	12	28.70	340.80	363.0	0.69	0.000
	Control	12	20.70	248.40	0	0	
Total	Experimental	12	29.00	348.00	342.0	0.80	0.000
	Control	12	21.90	262.80	0	0	

The findings of the post-testing conducted on the experimental group are displayed in Table 2. Regarding the evaluation of technological skills, encompassing analysis, design, production, usage, management, evaluation, and follow-up and development skills, the findings indicate statistically significant alterations in the mean scores of both the control and experimental cohorts. This suggests that the teachers in the experimental group have exceptional proficiency in utilizing technology.

This outcome can be ascribed to various factors, with one of the foremost being the efficacy of the training program in fostering motivation among school principals and

yielding favorable outcomes. The training program's engaging and pleasant characteristics encourage the passion and desire of principals to work. In addition, the principals employ a diverse range of abilities in order to enhance efficiency and streamline the management process. Through active engagement in the management process, principals cultivate the capacity to provide responses, facilitate assessment, and enhance understanding of management choices within various temporal frameworks. As a result, the incorporation of auditory, visual, and kinesthetic stimuli serves to enhance levels of engagement. This finding is consistent with prior studies conducted by Khattab and Sharman (2018), Amayreh and Ashour (2020), Al-Nawaji (2020), Al-Maliki (2021), and Saadeh and Hamza (2022), which revealed that principals who utilized a training program to acquire diverse technology skills shown elevated levels of performance. This finding offers support for the effectiveness of implementing a training program aimed at enhancing the technological competencies of principals.

In order to respond to the second question, "Are there statistically significant differences between the scores of the experimental group before and after applying the training program based on educational design in light of the training needs to develop some technological skills among school principals in Abha City?" The findings are shown in the table below.

Table 3: Pre and Post-Measurement

Skill	Pr/Po	N	M/R	S/R	Z	P
Analysis skills	negative rank	2	2.00	2	32.50	0.000
		10	4.00	40.00		
	positive rank	0				
	ties	12				
	total					
Design skills	negative rank	2	2.00	2	32.80	0.000
		10	4.00	40.00		
	positive rank	0				
	ties	12				
	total					
Production skills	negative rank	2	2.00	2	32.60	0.000
		10	4.00	40.00		
	positive rank	0				
	ties	12				
	total					
Usage skills	negative rank	2	2.00	2	32.70	0.000
		10	4.00	40.00		
	positive rank	0				
	ties	12				
	total					

Management skills	negative rank	2	2.00	2	32.40	0.000
		10	4.00	40.00		
	positive rank	0				
	ties	12				
	total					
Evaluation skills	negative rank	2	2.00	2	32.50	0.000
		10	4.00	40.00		
	positive rank	0				
	ties	12				
	total					
Follow-up and development skills	negative rank	2	2.00	2	32.70	0.000
		10	4.00	40.00		
	positive rank	0				
	ties	12				
	total					
Total	negative rank	2	2.00	2	32.70	0.000
		10	4.00	40.00		
	positive rank	0				
	ties	12				
	total					

The findings presented in Table 3 indicate a statistically significant disparity in the average scores of the experimental groups across multiple dimensions of technological competencies. These dimensions include analysis skills, design skills, production skills, usage skills, management skills, evaluation skills, and follow-up and development skills, as well as the overall post-measurement score. This finding indicates that the principals in the experimental group demonstrated enhanced technological capabilities following the evaluation.

The researchers posit that there is a correlation between the observed outcome and the efficacy of the training program in facilitating the acquisition of technological skills. The heightened enthusiasm and dedication of principals can be attributed to their increased interest in and passion for the program. This program employs a teaching approach that aligns with the core principles to be recognized and their significance in school administration. Consequently, all individuals involved in the discussions actively engaged in scientific debates and demonstrated a high level of respect towards their colleagues. The participants in this collaborative endeavor demonstrated mutual respect for each other's ideas, fostering an atmosphere conducive to the development of groundbreaking scientific breakthroughs that transcended the mere preservation of existing information. The investigative process has equal significance to the aforementioned processes of follow-up, anticipation, inference, design, alternative thought selection, grouping, reasoning, integrative thinking, and formative evaluation. Furthermore, the stage of explanation serves as a catalyst for principals to enhance their talents to a more advanced level. This discovery aligns with prior studies conducted by Khattab and Sharman (2018),

Amayreh and Ashour (2020), Al-Nawaji (2020), Al-Maliki (2021), and Saadeh and Hamza (2022), which investigated the effectiveness of the training program in improving a wide range of skills among school administrators. This discovery presents empirical evidence that substantiates the effectiveness of a training program in improving technological skills.

The last question, "Are there statistically significant differences between the scores of the experimental group in the post-application and follow-up application on the technological skills among school principals in Abha City?". In order to formulate an appropriate response, it is necessary to address the question. The results are displayed in the table that has been provided.

Table 4: Post and Follow-up

Skill	Po/ Foll	N	M/R	S/R	Z	P
Analysis skills	negative rank	7	5.60	39.20	9.820	0.100
		0	0.00	0.00		
	positive rank	5				
	ties	12				
	total					
Design skills	negative rank	7	5.60	39.20	9.710	0.092
		0	0.00	0.00		
	positive rank	5				
	ties	12				
	total					
Production skills	negative rank	7	5.60	39.20	9.600	0.098
		0	0.00	0.00		
	positive rank	5				
	ties	12				
	total					
Usage skills	negative rank	7	5.60	39.20	9.840	0.100
		0	0.00	0.00		
	positive rank	5				
	ties	12				
	total					
Management skills	negative rank	7	5.60	39.20	9.720	0.093
		0	0.00	0.00		
	positive rank	5				
	ties	12				
	total					

Evaluation skills	negative rank	7	5.60	39.20	9.610	0.090
		0	0.00	0.00		
	positive rank	5				
	ties	12				
	total					
Follow-up and development skills	negative rank	7	5.60	39.20	9.830	0.110
		0	0.00	0.00		
	positive rank	5				
	ties	12				
	total					
Total	negative rank	7	5.60	39.20	9.850	0.125
		0	0.00	0.00		
	positive rank	5				
	ties	12				
	total					

Analyzing the data in Table 4, it is clear that there are no statistically significant changes between the post-test and follow-up evaluations for the experimental group. According to the results of this research, the program's effectiveness did not decrease after it ended.

The observed outcomes can be ascribed to the efficacy of training programs in augmenting technological proficiencies among educational administrators, encompassing analytical, design, production, use, managerial, evaluative, and continuous improvement proficiencies. Consequently, there was no observable decrease in the aforementioned values for the people under consideration. Training programs provide the additional benefit of facilitating the integration of novel concepts with previously acquired knowledge, thereby fostering a culture of continuous learning throughout one's lifetime. The concept posits that by the provision of opportunities for principals to engage in diverse settings and refine their practical and cognitive skills, as delineated in the training program, there will be a mitigated likelihood of sudden or premature attrition.

Conclusion

This study presents empirical findings that corroborate the hypothesis that the introduction of a training program for secondary school administrators in Abha City yields positive outcomes in terms of improving technological competencies. Therefore, among several contributing elements, the effectiveness of training programs plays a crucial role in enhancing the motivation of school leaders and producing positive results. The training program possesses interesting and pleasant attributes that serve to enhance principals' enthusiasm and motivation towards their profession. In addition, educational administrators utilize a wide array of technological competencies to expedite the process of acquiring knowledge and foster comprehension. By actively participating in the management process, principals develop the ability to ask questions, enable evaluations, and promote comprehension of management decisions within different time frames. Consequently, the integration of aural, visual, and tactile cues generates increased levels of involvement.

Acknowledgments

The authors extend their appreciation to the Deanship of Scientific Research at King Khalid University for funding this work through Large Research Groups under grant number (RGP.2 /296/44).

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