

## Progressive computer test capabilities of the candidates proposed for the post of physical education teacher

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### Abstract

The research aims to use progressive test capabilities to identify the capabilities of prospective teachers of Physical Education, who desire to work as teachers in schools of education in all categories. This research was conducted using a descriptive research method and a total sample consisted of 60 experts, including 10 academic experts from the Curriculum and Instruction Department, 10 directors of Physical Education, 10 managers of schools, 5 experts in computer and 25 graduate students. The survey used questionnaires in collecting data. The questionnaire which was designed by the researchers sought to test prospective physical education teacher's performance with themes such as work under pressure, work amid distractions, speed of decision-making, power of observation, the level of intelligence, memory and concentration and synergies neuromuscular. The most important recommendations for the selection of prospective Physical Education teachers is to use the test proposed computer to learn about the capabilities of the candidates and the possibility of using the programme to develop the capacity of teachers.

**Keywords:** Test capabilities, computerised test, test the capabilities of physical education teachers, teacher's capabilities development.

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## 1. Introduction

There is current interest in using devices towards active learning across different countries (Park, Kim, Cho & Han, 2019). There is a concentration of educational experts who rely on curricula based on the acquisition of knowledge, skills and experiences of learners and then modify the positive trends of the learners towards acquiring the ability by themselves, through community service among other things (Georgiev, 2016). As a practical course, physical education courses aim to encourage learners to be more active and thus the main focus of the learning process in physical education requires an active teacher (D'Elia, 2019). Physical education and sports have become a specialty and are among the most important disciplines. As a result, the Egyptian Ministry of Education is seeking to fill in all the gaps quickly. The gaps the Egyptian Ministry of education intends to fill includes creating awareness of the teacher's specialty and importance in the system control, how to gain control and revalue the school activity that has been neglected for long periods by educational institutions at all educational levels (Aly, Abdelkarim & Abdelhakem, 2016; Mahmoud, 2018). The gaps are a result of weakness or potentially severe shortage in the number of graduates or the weakness of preparing operations in the academies of teachers' educational preparations, especially physical education and sports.

Alrwele (2018) and Alrajeh (2020) prepared a basic skills test for teachers as a working paper for all applicants for the position of teacher in the Kingdom of Saudi Arabia, which included the proposed test and a number of topics, such as general information and information about specialised materials; knowledge about some linguistic rules; knowledge about some calculations; knowledge of teachers on the use of techniques and teaching methods; and knowledge about the teaching and attitudes skills in front of students' irregular behaviour. Asmaa's (2015) study targeted the efficiency preparation test to judge the applicant's capabilities to perform as required by the physical education teaching division. The research has proposed testing on a number of themes that are measurable and can be adopted, such as degrees testers, decisions related to activities in physical education, curricula of different educational stages among other things. This was similar to the research of Tugelbayeva, Eleupanovna, Tokkulova, Nizamova and Kulzhanovna (2020).

Naif Al-Roumi (2015) researched how to test the personal capabilities of the teacher, i.e., how to test the teaching skills through an educational position in which the student will practice the role of the teacher and his performance. The study, which researched the capabilities and skills of teaching, was evaluated using a total sample of 150 male and female students. The research used two approaches descriptive and experimental, and yielded results that checked for the accuracy of the proposed list of applicants, the suitability of the application and rule on the validity of applicants to join the division of teaching, similar to the research of Buldu and Armagan (2019).

The Egyptian Ministry of Education (2015) gave a report on the method of testing applicants for the post of teachers in various disciplines. The applicants who applied were more than 130,000, and 30,000 teachers were to be selected from the total applicants for all disciplines. In all disciplines, test questions divided into five categories: general information, information about specialisation materials; knowledge about some of the rules of language; teachers' knowledge about the use of the techniques and methods of teaching; knowledge about the teacher's teaching skills; and attitudes towards irregular behaviour of their prospective students. The test, which was a written examination that lasted 30 minutes, was taken by all prospective teachers.

The Ministry of Education requested a number of faculty members to fill in as teachers due to the serious shortage of teachers in a number of disciplines, particularly physical education and sports. This included over 30,000 teachers. Due to the large number of applicants (nearly 300,000) who wanted an opportunity to land a job, the ministry proceeded to prepare a written test to differentiate between applicants and select the best. The results of the test were unexpected. The applicants were disappointed for not being able to land the position because they fell below the level of contemporary teacher and lacked compatibility with the labour market requirements. The applicants who failed to

pass the test expressed their disappointment in the governor-specific mechanism for selecting new teachers in all disciplines, particularly physical education and sports. According to the applicants, the method of selecting the teachers was not the best because it did not reflect their true potential. To address this situation, there was a need for a scientific research that could contribute to the governor-specific mechanism for selecting prospective teachers. The aim of this research was to identify the capabilities and suit to work as teachers of physical education candidates in schools of education in all levels.

The major research question that this research intended to answer is as follows:

RQ1: What is the appropriate proposed test to assess teacher candidates who intend to work as physical education teachers?

## 2. Research methodology

**Table 1. Sample rating categories search**

<i>n</i>	Category	Specifications	Years of experience	<i>N</i>
1	Academic experts from the department of curriculum and instruction	Get a doctorate degree	5 years of experience in the field of work	10
2	Directors of physical education	Academy on scientific degree after graduation (Diploma – Master – PhD)	Over 5 years of work experience	10
3	Directors of schools	Who obtained the scientific academy after graduation degree (diploma – Master – PhD)	Over 5 years of work experience	10
4	Experts in the field of computers	Get a doctorate degree	Years of experience in the field of work	5
5	Graduates of colleges of physical education in Egyptian universities	From five Egyptian universities (graduate 15–10 graduates)	Graduation year (2010: 2013)	25
Total				60
<i>n</i> = 60				

This research used both descriptive and experimental approaches. The appropriateness and the nature of the research that makes the experiment reliable is that there was an assessment before and after the experiment. Data for the research were collected with the help of questionnaires.

The research was conducted among community graduates and graduates of colleges of physical education including the following universities: Beni Suef University, Helwan University, Alexandria University, Mansoura University and Assiut University. The sample of this research was selected from a variety of age groups. The participants were involved in various aspects of the research. Some of them played a role in the construction of the research questionnaire, others provided information and

others answered the questionnaires. The preparation of the research team for the application of the proposed digital test was as follows:

The participants (60) who were experts were selected from various categories.

### **2.1. Test measurement tools**

The survey has been designed (by the researchers) to get to know the views of experts on the proposed eight axes that are covered by the proposed computer-based test capabilities, and support tests that measure a number of themes such as:

1. Ability to serve under pressure;
2. Work amid distractions;
3. The speed of decision;
4. Observation power;
5. Intelligence level;
6. Memory and concentration;
7. Synergy neuromuscular;
8. Teaching skills for teachers of physical education and sport.

### **2.2. Content of the test**

#### **2.2.1. Design poll form**

The researchers designed the form to get to know the views of experts on the questions proposed. The experts examined the representation of the eight axes covered by the test computational capacity of the proposed method in addition to the grades proposed. They checked whether each axis or the types of questions proposed are the most suitable for the proposed test and they examined the total score for the test as a whole.

Another factor was addressing experts' opinions about themes and questions statistically to determine the final shape of the proposed test in terms of the form of questions – the proposed grades – allocated to the test before the proposed construction of the digital test time.

The researchers considered the construction of the test in cooperation with the electronic programme experts to determine its mode of use and to gain experience on how to deal with the mistakes of the application and access the final form within the proposed test time.

The final factor that was considered was assessing the computer lab to verify if it is equipped to apply the search experience, making sure of the validity of the test.

#### **2.2.2. Stages of the test building**

The tests' building process was in accordance with the following stages:

1. Organisational structure of the test equipment;
2. The preparation of lists of competencies;
3. Arbitration competencies;
4. Develop finalised competencies;
5. Develop test specifications;
6. Writing the questions;
7. Review items;
8. Demo application to the terms of the tests;
9. Data analysis;
10. Preparation of the final models for testing.

### 2.3. Pilot study

The applied exploratory experiment was pilot tested on a group of 20 students (10 male and 10 female students of the 4th year), from the teaching Division of the Faculty of Physical Education, Beni Suef University (2014–2015), who were not a part of the sample. A specialised laboratory computer from one of the academic centres in Beni Suef University was used to determine the integrity of the test and they made it ready for application to the sample core. The results of the pilot study showed that replacing the number three questions within the test were failed by most of the testers. About 90% of the participants of the pilot test failed the test and this influenced the researchers' choice for a modification of the test time from 50 to 60 minutes. After the modification, the success rate of the total testers was 80% and the average time that was spent for the test was around 40 minutes.

### 2.4. Application of search experience

There was an applied search on experience for the selected sample by a factor of one educational academy governorate (Beni Suef University), on the same terms and regulations and specifications that have been taken into account in the application process for scientific transactions of the test. Then, the results were monitored and statistically treated as a prelude at a rate of two tests between each test and the other period of time amounted to 1 week only.

#### 2.4.1. Analysis

The analysis of the results for this research was carried out with the help of correlation. Validity and reliability tests were conducted to check for the statistically significant difference of the variables in the tests.

## 3. Results

This section provides the results of the research. It explains the validity test and the other findings that the researchers arrived at.

### 3.1. Validity test

The research relied on differentiation to test the validity and the sincerity of the test. The tests were applied to a group of students from the fourth teaching division of the Faculty of Physical Education, Beni Suef University (2014–2015). The individual participants were selected for the test based on their experience for the exploratory research. Individuals who had received the order of 1:10 in their results of the third-year exams for the same division (between the year 2013 and 2014) featured as a group, in addition to the students training division third year for the academic year 2013–2014.

Table 2 shows the results of the validity of differentiation of the proposed test:

**Table 2. Significant differences between upper quarter and lower quarter near top of the themes and suggested questions of test**

Tests	Non-distinctive group		Distinctive group		Value (T)	To
	SD	SMA	SD	SMA		
The proposed test questions	4.131	57.2	4.427	82.6	13.264	Distinctive group

$n = 20$ .

The value (T) driven at 18 degrees of freedom and the moral level of 0.05 = 1.734.

The remarks that are evident from Table 2 are as follows: there are statistically significant differences between the distinctive and non-distinctive groups in the proposed test questions. At the direction of a distinctive group, this shows that the tests are an acceptable degree of honesty.

### 3.2. Reliability test

The stability tests account for the application process and reapplication on outstanding sample of the graduates of the Faculty of Physical Education, University of Beni Suef, (25 students). The interval for the analysis was 15 days between the first application and the second application. Table 3 shows the degree of persistence used for the tests.

**Table 3. Reliability between the application and reapplication correlation coefficients**

Tests	Application		Reapplication		The correlation coefficient
	SD	SMA	SD	SMA	
The proposed test questions	5.827	78.8	4.427	78.6	0.961

$n = 20$ .

The value (c) tabulated at 8 degrees of freedom = 0.05; significance level of 0.459.

From Table 3, the following remarks can be seen about the correlation coefficients between the application and reapplication of the proposed test questions. It amounted to 0.961 statistically significant at the level of correlation coefficients (0.05) and this shows that the tests are at an acceptable degree of reliability.

### 3.3. Results from the test

Table 4 exhibits the significant differences between the two tests that were carried out (the pre-test and the post-test).

**Table 4. Significant differences between pre- and post-indices for members of the test sample in the proposed test questions**

n	Variable	Pre		Post		Value 'T'
		SD	SMA	SD	SMA	
1	The proposed test questions	4.923	79.36	6.150	69.92	5.991

$n = 50$ .

The value of 'T' driven at 48 degrees of freedom and the moral level of 0.05 = 1.971

As can be seen from Table 4, there are statistically significant differences between pre- and post-indices experimental group in the overall test questions and in the direction of the dimensional measurement and this is what shows the validity of the proposed computer-based test capabilities.

## 4. Discussion

This research sought to bridge the gap in the existing test for selecting teachers to fill in academic positions in schools. The candidates or applicants for previous selection tests showed a lack of confidence in the previous tests and as such, there was a need to revise and modify the existing test. There was a need to select a test that truly reflected the qualities of the participants (Agha & ELDaou, 2018; Mola & Kelkay, 2020; Kurt, 2020).

The proposed test by this research was a computer-based test which was developed with the experts in the field of education, most of whom belonged to the physical education and sports sector. The results of the test proved that there was a significant difference between the previous test that was originally provided by the governors of the education ministry and the modification of the test

that was provided by this research. Most of the participants failed the previous test but performed better when the test was modified. It is, however, noteworthy that the modified test, which was conducted with the help of the experts in the field, truly reflected the qualities of the participants. This research believed that a test for selection of potential candidates for a job should reflect the true qualities of the candidates as previous literature explained about recruitment process for the selection of the best candidates (Bulger, Jones, Taliaferro & Wayda, 2015; Sawleshwarkar, Rangnani, Mariwalla & Halbe, 2018).

This research used eight different axes to measure the basic required skills of every teacher. It is not enough to have a test that truly reflects the qualities of the applicants. The qualities of the applicants must corroborate with what the organisation needs from the applicants (Sariboga & Serin, 2020). In other words, the qualities of the applicants must fit the basic skill requirements of the job position they are applying for (Hamann, 2019; Ozberk & Uzunboyly, 2017; Saydam, Orhan, Toker & Turasan, 2020; Stronge, 2018). This research intended to revise the test for the recruitment of physical education teachers who could fit in to other teaching positions if there were no teachers for other courses. The research measured basic abilities such as the ability to serve under pressure, work amid distractions, speed of decision, observation power, intelligence level, memory and concentration, synergy neuromuscular and teaching skills for teachers of physical education and sport. The eight axes, apart from it being designed by experts in the field, resonate with the constructs of previous research (Capel, Cliffe & Lawrence, 2020; Duckworth & Yeager, 2015; Hakim, 2015). Whether the appointment to schools as a teacher is in the government sector or in the private sector, basic requirements of the teacher and the school management's recruitment method should be at par with required standards (Glod, 2019; Tenekeci & Uzunboyly, 2020)

## 5. Conclusion

This research sought to fill in the gaps in the selection process of teachers using a test that was developed by the governors in the Ministry of Education by modifying the test to address the major concerns of the applicants. The previous test, according to the applicants, did not truly reflect their qualities and capabilities. For a selection process to fill in any job position, the qualities and abilities of the applicant must be analysed to assess their possibility of filling in the position they have applied for or any other position that their capabilities may be suitable for. This research, therefore, sought to modify the test to truly reflect the capabilities of the applicants. However, the researchers in their modification examined the basic requirements or skills that a flexible physical education teacher needs to possess. It is important to note that the flexibility of the physical education teacher means that they can teach other courses if there is a shortage of teachers in those courses. The proposed test, therefore, balances the need of the governors of the ministry of education and the need of the applicants.

The analysis of the test proved the validity and reliability of the test. The test was developed with the help of the experts in the field. It is, therefore, safe to use the test method for future recruitment processes for teachers. The proposed test also denoted the need for already employed teachers who may need on-the-job training. The proposed test will also help in making decisions that address conditions of teachers who have basic skills but are not available to teach.

## 6. Recommendations

From the results, this research made few recommendations for the governors of the Ministry of Education and to the other teacher recruitment agencies.

- The research recommends the use of the proposed computer-based test to identify the capabilities of candidates for the post of physical education, to work as teachers in schools of education and in training of teachers in education academies. There is a possibility of using the programme to develop the capacity of teachers.



- The research also recommends adding the services of an educational photographer who can take pictures of on-the-job performance of teachers, to assess technical errors of the physical education teacher for the lesson to see the teacher's ability to evaluate the level and the extent of the lesson material and possession of teaching skills.
- It is recommended to apply the test in the last week of the end of the school year (before teachers enjoy vacations).

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