

Developing a Digital Framework for Ranking Educational Institutions in Light of Egypt's Vision 2030

Provided by
Omar Abdelalim Mohamed Abdelalim
Head Master of Naser Prep. School. Minia
Prof. Dr. Zainab Mohamed Amin
Professor of Instructional Technology
Faculty of Specific Education
Minia University



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Abstract:

This study aimed to develop a proposed criteria list for a digital platform that conducts descriptive, diagnostic, predictive, and prescriptive analyses of student academic performance and teacher teaching performance to classify educational institutions in light of Egypt's Vision 2030, at the levels of a class period, school day, semester, and academic year. The results would be presented to educational system stakeholders for policymaking and partnerships. The study involved constructing an initial framework for a digital platform criteria list aligned with Egypt's Vision 2030 using a descriptive-analytical and systemic approach. The Delphi statistical method was then employed to finalize the criteria list after presenting it to experts in three rounds to measure face validity, reliability, and consensus levels. The final consensus level among experts was 93.72%. Based on these findings, the researcher recommends adopting the criteria list in building a digital platform for classifying educational institutions in Egypt in line with Egypt's Vision 2030.

Keywords:

Digital platform, Ranking Educational Institutions, Egypt's Vision 2030, Educational performance

Introduction:

Educational literature, research and studies have addressed the concept of (performances) as the basic nucleus for creating the learning process, and it is represented by the practices that take place within the educational situation or as the basic unit for educational analyses, which are distinguished into two basic types: the teacher's teaching performance, and the learner's academic performances. Teaching performances include both teaching behavior and teacher behavior, while learner performances are represented by all verbal, skill, cognitive or emotional behaviors resulting from the teacher's performances in the educational situation. The growth and level of performances are measured and classified by the statistical model for measuring

added value (*Halas, Abu Shakra, 2017, 15*), (*Shahata, 2012: 161-163*), (*Imran, 2018*).

Digital transformations have imposed on the educational field, especially educational technology ‘the creation of mechanisms that collect, classify and analyze these (data - performances - variables) that result from the interaction of these elements. In light of this, (*Farag, 2020*) believes that educational analytics” Learning Analytics The big data generated from the educational process is used to support the learner, his resources and his performance to achieve the learning objectives, and then provide educational institutions (Educational Institutions) with the data necessary to make and support decisions, and thus better understand how learners learn and the systems from which they learn.

The strategic plan for pre-university education in Egypt was developed for the period from 2014 to 2030. Research and studies have confirmed that this strategy is ambitious and distinctive, and will move Egypt to a qualitative leap provided that it is applied and implemented in a sound scientific and methodological manner, and appropriate mechanisms are found to implement and measure its outcomes (*Imran, 2018, 16: 30*). As well as the Edu2.0 education system project Which is still in its early stages, which works to link the teacher's annual report to the learners' results.

The 2030 strategic plan includes a set of indicators that represent the basic pillars that track availability, quality, and management of the educational system. Among these indicators are monitoring and evaluating the growth of learner performance in light of achievement indicators, educational analyses, and learning management systems, and improving the quality of school life for all educational levels (*Imran, 2018, 16: 30*). Egypt's Vision 2030 addressed the strategic objectives, indicators for measuring education performance, and priority challenges facing education and development programs.

Therefore, (the proposed model for the components of the digital platform for classifying educational institutions in Egypt in light of Egypt’s Vision 2030) is a core of these requirements in the field of education, and the achievement of many functions of

educational technology science, and highlighting the integration of educational technology science functions in achieving the creation of mechanisms for analyzing educational data, and moving educational technology from designing and employing e-learning methods and strategies to managing and analyzing the educational process as a whole.

In light of the above, the problem of the current study was determined to reach the criteria for designing a digital platform to classify educational institutions in light of Egypt's Vision 2030 to analyze the learner's academic performance and the teacher's teaching performance and measure the effectiveness of Educational Institutions, classify them, and face the challenges of achieving Vision 2030 in education.

Therefore, the current study attempts to answer the following main question: **What is the proposed model for the criteria of the components of the digital platform for classifying educational institutions in light of Egypt's Vision 2030?**

Building digital educational platforms

Digital transformation in educational systems has become a necessity to achieve educational goals, as modern technology has helped shape the thinking mechanisms of emerging digital generations. Digital environments and platforms have provided many advantages in order to achieve educational goals, especially their overcoming of the factors of time and place and investing the energies and activities of these generations in achieving all educational goals, which is what previous research and studies have indicated. (*Abdul Qader, Khalifa, 2021, 643*).

The digital educational platform includes features such as the ability to be productive, easy to access, availability, cooperation, participation, implementation of tasks and assignments, and providing assessment in its various forms: diagnostic, initial, formative, and summative, and providing feedback (*Abdul Qader, Khalifa, 2021, 643*).

The study (*Zahran; Gouda, 2021*) aimed to identify the effectiveness of using distance learning platforms (virtual classrooms integrated into the learning management system (Blackboard) in teaching Mathematica program In developing

academic feelings towards mathematics and academic achievement in the light of the (covid-19 pandemic).

The study (*Al-Shahri, 2021*) aimed to reveal the effect of digital stimuli using the interactive digital platform (Edmodo) as one of the flipped learning platforms on innovative thinking among secondary school students, and its use in the educational process.

The study (*Al-Mulla, 2021*) addressed the evaluation of digital platforms used in distance education in international schools in the State of Kuwait and concluded that the best criteria in terms of availability and use are the digital content criterion on the digital platform, followed by the digital content display criterion on the digital platform, then the multimedia and interaction tools criterion, then the technical characteristics criterion of the digital platform, and finally the evaluation of students on the digital platform.

A study (*Oreski, etc., 2023*) dealt with (Learning analytics of learners' activities and achievements with analysis of learners' behavior patterns in Moodle learning management systems With YouTube platform) The results indicated the need to apply integrated data to develop predictive models between diverse learning environments.

In a study (*Meng, etc., 2023*): quality assessment of educational platforms Lingua.Ly ,Hello,TalkWeibo and TikTok ,Duolingo Used by (410) learners from (15) Chinese universities, the results generally indicated that criteria other than design and privacy considerations are the motives that build an educational environment that is compatible with the learner and in which he participates, namely familiarity and satisfaction, which makes the learner more immersed.

Justifications for using educational platforms based on learning analytics

Many studies have confirmed the justifications for using digital educational platforms: (*Abdel Qader, Khalifa, 2021, 685: 643, 689*), (*Al-Rahili, 2022*), (*Al-Shahri and Al-Hafezi, 2021*), (*Teasley, etc., 2021*): Keeping pace with the era of digitalization and digital transformation in educational systems and the interests of the learner (Generation 2030) to achieve more educational

goals and shape the thinking mechanisms of the emerging digital generation of 2030 who wants to take independent steps and control how they learn.

Egypt Vision 2030

The Arab Republic of Egypt seeks to achieve the sustainable development goals set by the United Nations in 17 goals, which represent a qualitative shift in the life of the Egyptian people in all fields by the year 2030 by employing science and knowledge to build and maintain the nation. One of the most important of these goals is (education), as the fourth goal states: “Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all” (*Gohar, et al., 2022, 10*), (*Al-Faqi, 2022, 35*)

The sustainable development agenda, Egypt Vision 2030, was prepared with the participation of various ministries, agencies, sectors and organizations, with the assistance of experts in various fields, including the strategic vision for education until 2030, which states “ **Providing education and training to all with high quality without discrimination, within the framework of an institutional system that is efficient, fair, sustainable and flexible. It should be based on the learner and trainee who is able to think and is technically, technically and technologically proficient, and should also contribute to building an integrated personality and unleashing its potential to the fullest extent for a citizen who is proud of himself, enlightened, creative, responsible, accepting of diversity, respecting differences, proud of his country’s history, passionate about building its future and able to deal competitively with regional and global entities).**⁽¹⁾

This means that by 2030, education and training will be made available to all with high quality without discrimination, within the framework of an institutional system that is efficient, fair, flexible and sustainable, and that is based on the learner and trainee who is able to think and is technically, technically and technologically proficient, and that it also contributes to building an integrated personality, and improving the quality of life of the

⁽¹⁾sdsegypt2030.com/البيد-الاجتماعي/التعليم/

Egyptian citizen and improving his standard of living (*Al-Masry, Radwan, 2023: 275*).

Study of (*Abdel-Ati, 2022, 321*) confirms that this vision expresses the aspirations and ambitions of the National Agenda launched in February 2016, as it reflects a long-term strategic plan to achieve the principles and goals of sustainable development in eight areas for three dimensions: the economic dimension, the social dimension, human development and training, and the environmental dimension.

Study sample:

Based on the nature of the current study methodology, which follows the descriptive, analytical and systematic methodology, and the proposed model, the current study community consists of (25) experts specialized in educational technology, information technology, curricula, teaching methods and other educational specializations. The number of those who expressed their willingness to continue the rounds of applying the tool according to the (Delphi method) to arbitrate the list of study criteria reached (11) experts. The following table (1) shows the classification of the study community (participating experts):

Table (1) Distribution table of variables (academic degree, specialization) among experts and participants in the arbitration of models

Level	Academic degree		Level	Specialization	
	number	ratio		number	ratio
professor	11	44%	Educational Technology	14	56%
assistant professor	7	28%	Curricula and teaching methods	5	20%
Other	9	36%	Other specializations	6	24%
Total	25	100%	-	25	100%

From the above table that the study community consisted of (11) experts with the rank of professor, at a rate of (44%), (7) with the rank of assistant professor, at a rate of (28%), and (9) with the rank of lecturer, at a rate of (36%), according to the variable of job grade.

The researcher presented the initial image of the proposed models to a group of experts (25) to calculate the apparent validity of the models and interfaces. Then two other rounds were applied using the Delphi method and the opinions of (11) experts were surveyed. In light of these results, the final image of the list of criteria was reached.

Procedures for building (the proposed model for the standards of the components of the digital platform for classifying educational institutions in light of Egypt's Vision 2030):

1- The importance of the proposed model for the standards of the components of the digital platform for classifying educational institutions in light of Egypt's Vision 2030:

- Keeping pace with the digital age and digital transformation in educational systems and learner interests (Generation 2030).
- Providing an environment parallel to the real environment provided by the educational institution includes employing web applications to provide a set of tools and services.
- Monitoring, following up and effectively organizing what happens inside the classroom (classroom management).
- Practical application of digital map, neural network and learning dashboard interfaces.
- The digital necessity for every educational institution to have a direct presence on global social networks.
- Displaying the performance of educational institutions, teachers and learners to the educational process partners and educational policies in light of the powers and permissions available to each user.
- Achieving the goals of Egypt's Vision 2030 in education.

3) Stages of building the model: The researcher followed the following stages and steps:

- 1- Analyze data and find relationships between them through:

- Study formal and informal, free and open source learning platforms such as edunext.co , and the Skolera , Moodle. and private school management platforms ‘ and digital platforms for managing educational institutions) Edu Step Up, (in addition to reviewing the digital platforms based on the classification of performances in other fields, such as (platforms for classifying the performances of players in sports matches, platforms for classifying the performances of commercial institutions in global markets, and others).
- 2-Building the initial image of the standards of the components of the digital platform for classifying educational institutions in light of Egypt’s Vision 2030, which consists of (17) standards.
 - 3-Verifying the apparent validity of the model of the digital platform components criteria for classifying educational institutions and their suitability for the objectives for which they were prepared, where the researcher presented the model to a group of arbitrators and experts to express their opinions and observations on the components and relationships between the components of each interface and the connection of each element to what it was prepared for or to reformulate it, or suggestions that they see adding or improving from their point of view to express their opinions and observations on its components, comprehensiveness and connection to the objectives or to reformulate it, and the following table shows the distribution of the percentages of agreement between the arbitrators for each element of the arbitration, and Table (7) shows that the average percentage of agreement between the arbitrators for all paragraphs represents (71.63%), which is an acceptable percentage in the study.

Table (2): Average agreement rates between arbitrators on each element in the criteria of the components of the digital platform for classifying educational institutions.

The element	Agreement rate
Model of criteria for components of the digital platform for classifying educational institutions (17 paragraphs) with a score of (agree, neutral, disagree)	71.63%
4-Verifying the stability of the tool, by finding the internal consistency coefficient between the paragraphs (criteria of the components of the digital platform for classifying educational institutions) using the Cronbach's alpha stability coefficient, which shows the extent of the stability of the tool in all paragraphs, and also shows the extent of the stability of the paragraphs in measuring the field to be measured, and the stability coefficients are clear (67.4), which is an acceptable percentage.	
5-Reaching the final image of the model of standards for the components of the digital platform for classifying educational institutions by applying the two rounds of the Delphi methodology.	
6- Display and interpret results.	

Second: Procedures for building the final image of the standards:

To reach the ideal final model of the proposed models in light of the point of view of a survey of experts in educational technology, curricula, teaching methods, other educational specializations, and educational research centers by applying the (Delphi method), one of the methods that depend on investigating the opinion of field experts through several rounds until reaching an acceptable percentage of agreement (*Lajilat, Amrouni, 2021, 321*), meaning that it is a method predicted by a group of people interested in the field of research and development and they are called experts . (by directing a set of questions in the form of a repeated survey to them, and they carry out a number of repeated rounds, until the proposed model is reached that represents reality

and a simplified part of the truth, and includes the important aspects that help in understanding and controlling the phenomenon being studied (Okoli , Pawlowski, 2004.) ،(Hassan, 2021).

- 1- Reviewing the various references and literature that employ the modified Delphi method in arriving at the results of research and studies, such as (Qatit, 2020), (Okoli, Pawlowski, 2004).
- 2- Design initial images for forms on) Google Form (Then collect them in one platform) Google site⁽²⁾¹. (Then, contact the experts and participants through their personal accounts on social media platforms.
- 3- Application of the (initial) round of the Delphi method, which includes all experts and participants, with the aim of conducting statistical treatments related to the psychometric properties of the list of criteria, from apparent validity and reliability calculation.
- 4-Application of the statistical model input (Delphi statistical method), based on two rounds with the aim of reaching a consensus of opinions and final results regarding the optimal vision that represents each proposed model in a way that ensures the comprehensiveness and control of all main and subsidiary aspects, where a number of (11) experts agreed to complete the first round and the second round.
- 5-First round application procedures:
 - 1.The final list of experts who expressed their willingness to complete and participate in the model evaluation rounds according to the Delphi statistical method was prepared. Their number reached (11) experts.
 2. Sending the forms after modifying them in reviewing the recommendations (the initial

⁽²⁾<https://sites.google.com/view/2egypt2030>

- round for all participants) to the specified experts to express their opinions, taking into account that the group of experts does not know each other's opinions by answering the forms' questions with a degree (agree, neutral, disagree). All the experts' questions about the study's method and methodology were clarified and explained.
3. The results of the first round were collected, and then the researcher relied on the modified Delphi method acceptance criterion (81%) or more as a percentage for adopting the evaluation elements of the models that obtained the experts' consensus.
 4. Analyze the results and extract the arithmetic means, percentages and standard deviations for all elements and models.
- 5- Procedures for implementing the second and final round:
1. In light of the results of the first round, and to further ensure the reliability and validity of the tool and the response of the experts, the researcher made amendments by adding or deleting according to the opinions and recommendations of the experts in the first round.
 2. The forms were resent to the same first round experts, where each expert was shown his/her response score, and the responses of the remaining experts in the first round at the level of each paragraph and field of the questionnaire in terms of the average response, percentage, and standard deviation, and they were asked to give their opinion on whether to continue with their previous scores or give another approval score for the second round.
 3. Collecting the results of the second round, where the researcher relied on the modified

Delphi method acceptance criterion (92%) and above as a percentage for adopting the elements of the wise models that obtained the consensus of the experts.

4. Analyze the results and extract the arithmetic means, percentages and standard deviations for all elements and models.

7- After completing the two rounds of the Delphi model, the researcher reached the results that were statistically processed and interpreted, then presented the research recommendations and proposals.

Presentation and interpretation of study results

The study question states “ :What is the proposed model for the criteria for the components of the digital platform for classifying educational institutions in light of Egypt’s Vision 2030? ” To answer this question, the researcher prepared the initial image of (the proposed model for the criteria for the components of the digital platform for classifying educational institutions in light of Egypt’s Vision 2030 (and then presented it to a group of experts in several rounds, where the results of the arithmetic mean for the level of agreement and the percentages in each round came as shown in Table(3) .

Table(3): The arithmetic mean of the degree of agreement and percentages in Delphi rounds for each element of the proposed model for the criteria of the components of the digital platform for classifying educational institutions in light of Egypt’s Vision 2030

The element	Mean approval level and percentages in the three rounds					
	Primary		The first		Second	
Model of criteria for components of the digital platform for classifying educational institutions (17 paragraphs) with a score of (agree, neutral, disagree)	28	54.9%	37	72.5%	49	97.8%

Table: shows that the results of applying the Delphi rounds at the level of arbitration elements reached the percentage of arithmetic averages for the level of experts’ agreement on the paragraphs of the criteria for the components of the digital platform for classifying educational institutions in the first round (72.55%), while the approval rate in the second round reached

(96.08%), which means a significant increase in the percentage of experts' agreement in the second round on all criteria compared to what it was in the first round. This is explained by the clarity of the complete vision after presenting the list of criteria proposed in the study, then presenting the guide rounds after round. This is also explained by the researcher making amendments in light of the recommendations of each round about the other by amending, adding, deleting or rephrasing. In light of this, the researcher concluded that:

- The necessity of unifying the efforts of educational institutions into a single digital entity that includes all the performances of all elements of the educational system.
- Providing a digital environment parallel to the academic environment in the school that displays performances that occur moment by moment, as happens in many activities in other fields that collect and analyze their performances at all levels.
- Presenting a realistic measure of the performance of teachers, learners, and educational institutions that achieve or do not achieve (the goals of Egypt's Vision 2030 in education).
- The necessity of including this platform with the education and learning systems, applications, tools and platforms used by educational institutions by providing (APIs).

Finally:

The final model consists of a model of the standards of the components of the digital platform for classifying educational institutions in light of Egypt's Vision 2030, which consists of:

Model of standards for the components of the digital platform
Classification of educational institutions in light of Egypt's Vision 2030, which consists of:

- 1) Home page includes a display of performance analytics of institutions through (Academic year timetable, Geographical scope, most positively performing students, The most positively performing teachers, the most positively performing institutions.)

- 2) Database structures include: (Educational institutions' identification and basic data, Human Resources, Material resources, Teacher's performances, Learner performances, Learning outcomes, Relationships between data in (balanced scorecards, checklists, performance indicators, metrics, evaluation criteria, competencies, report card)
- 3) Analytics algorithms include:
 - Neural network model relationships to educational institutions' performance, teachers' teaching performance, and educational performance.
 - Descriptive Learning Analytics (What?).
 - Diagnostic Learning Analytics (Why?).
 - Predictive Learning Analytics (What will happen in the light of?).
 - Guiding Learning Analytics (How to Use it?).
 - Linking all analysis results to the goals of Egypt Vision 2030.
- 4) Visualization and learning dashboards.

Research Recommendations:

- 1) Developing the proposed model for the digital map of educational institutions' data in Egypt after the availability of complete documented data to achieve the highest degree of accuracy in predicting future needs.
- 2) Rethinking quality assurance and accreditation indicators in line with the digital age and artificial intelligence (educational data mining and educational data).
- 3) Adoption of the proposed neural network model for educational institutions data on a global scale in learning platforms.
- 4) Developing learning dashboard interfaces that are compatible with each element of the educational system.
- 5) Adopting the proposed model for standards for components of the digital platform for classifying educational institutions in designing management systems and applications for public and private educational institutions

Research Suggestions:

- 1) Conduct experimental research on the use of these models within the classroom.
- 2) Conduct similar research in learning analytics on educational performance rate.
- 3) Conducting research according to the proposed models to develop the performance of higher education institutions
- 4) Conducting research on achieving each indicator of Egypt Vision 2030.

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