

Progressive Anticipation: A Forecast Methodology in Decision-Making among School Administrators

Paolo Antonio C. Noceda, MAEd; LPT

DOI: 10.29322/IJSRP.12.04.2022.p12412

<http://dx.doi.org/10.29322/IJSRP.12.04.2022.p12412>

Paper Received Date: 15th March 2022

Paper Acceptance Date: 1st April 2022

Paper Publication Date: 6th April 2022

Abstract- One of the toughest parts of being an administrator is to make the most suitable decisions in the circumstances faced in school. This study is guided by progressivism and has showed the significance of the problem-solving approach in education specifically in decision-making by using the forecast methodology termed as progressive anticipation. The researcher has identified some of the key problems faced in educational management and has proposed the use of a computer software that is capable of analyzing fragments to show the best options to solve the encountered school problems. The research output has also identified the software framework which will guide the programming of the aforementioned software.

Index Terms- Progressive Anticipation, Decision-Making, Problem-Solving approach, Forecast Methodology

Introduction

Chess is a game of decision-making. It uses the ability of players to forecast moves that will be advantageous to win over the opponent's King. Johannes Zukertort, one of the most known chess players of the 19th Century, even said that "chess is the struggle against error". This means that decisions made in playing chess are crucial to be successful in arriving at the desirable results by avoiding known errors. In the school setting, administrators are often challenged to move the best piece when facing grievances in the school community, finding means to supply deficiencies in resources, proposing win-win solutions in academic dilemmas and others.

Decision-making is one of the toughest actions that every school administrator has to take. It involves a step-by-step process where careful analysis and synthesis of gathered information is required to ensure that the most suitable decision will be made. University of Massachusetts, one of the major public research universities in America, has identified the seven steps to effective decision-making. This includes the identification of the decision; gathering of information; identification of alternatives; weighing of evidences; choosing among alternatives; taking actions; and reviewing the decision. It says that such decision-making process can help people to make deliberate and thoughtful decisions by using organization of relevant information and possible alternatives.

Lynch (2016) said in her article that progressivism is more into the positive changes in the school community and problem-solving approach is a substantial factor in making education effective. Thus, administrators who are guided with this philosophy centers their decisions on how it will become beneficial for the learners. Furthermore, John Dewey views experience as a very important factor in education. D'Agnese (2017) in his study of Deweyan education even emphasized that educators are involved in producing experiences for the learners. This explains the responsibility of educators to ensure that policies, which are products of good decision-making, will allow students to be holistically formed through learning by experience.

Progressive anticipation is a product concept of problem-solving approach. It allows administrators to come up with a series of forecasted moves that challenge the possible arising errors. When integrated in computer software, such program further develops in the discovery of new ideas that may aid in the future decisions to be undertaken. Anticipation in decision-making was used in an experiment conducted by Humbert Lesca and Nicolas Lesca (2014). APROXIMA, a computer software that directly extract anticipated fragments, where used to make decision-making easy and quickly by scanning built targets and compare it with the digital data obtained from different sources in the internet. This technology has allowed the quick presentation of options that is best suitable to the decision that are about to be taken. By integrating computer analysis and synthesis to the decision-making process of schools, it may provide just and well-thought decisions suitable to the circumstances faced.

In the realization of the abovementioned concepts, this study aims to search deep into progressivism and problem-solving approach as viewed by some known contemporary philosophers like John Dewey. Likewise, the research also aims to propose a framework for progressive anticipation as a forecast methodology in decision-making among school administrators and use data analytics as its main tool.

The Guiding Philosophy of Progressive Anticipation

Contemporary philosophy such as progressivism focuses in the learner and view education as free and flexible. Fredholm (2017) discussed the significance of progressivism in the development of the educational system in Sweden. It says that progressivism focuses more on deliberate communication and diffusion of multipurpose and generic knowledge in school. This explains the move to

improve from the traditional disciplinary approach as used for the longest time in their country. Relative to our educational system, the K to 12 Curriculum, which started in the school year 2012-2013, has also managed to introduce a modern pedagogy with the students as the center of learning. It allowed the discovery of their own solutions to the given and arising problems and at the same time has exposed them in experiences necessary for growth and development.

Shapiro as cited in King & Coughlin (2016) described problem-solving approach or PSA as “a process with emphasis on individualized interventions that derive from the analysis of instructional/environmental conditions skill deficits . . . guided by a systematic analysis of instructional variables that is designed to isolate target skill/subskill deficits and shape targeted interventions”. With PSA, learners are able to enhance their critical thinking skills through careful analysis of problems and synthesis of generated solutions. This has nourished the idea that PSA should elevate to the level of administrators and thus use the aligned approach in their educational management particularly in decision-making.

A Forecast Methodology

From Progressivism as its roots to Problem-Solving Approach as its main branch, the tree of this concept has grown into the use of forecast methodology called as Progressive Anticipation. The forecast methods are commonly used in experiments generating new ideas from scientific predictions as a product of careful study of data. In the study conducted by Vasquez, et. al. (2017) entitled “Assessment of an Adaptive Load Forecasting Methodology in a Smart Grid Demonstration Project Energies”, load forecasting involves the accurate prediction of the electric demand within a grid. Using short-term, medium-term, and long-term forecasting, the scientists were able to determine into where electricity should be supplied more according to the demand and area consumption. The time-frame reference as discussed in their study can be used in the forecasting method being developed in decision-making for effective school management.

In statistics, forecasting is a major feature in regression analysis. Data is observed and analyzed accordingly to come up with a basis to support a forecast. Plitnick, et. al. (2018) uses Time Series Regression (TSR) than the Multiple Linear Regression (MLR) in their study of the flood events in Schenectady, New York. Using this method, the researchers were able to remove the noises in the data by decomposing the time series which showed an increase in correlation between the variables pertaining to past and present occurrences of flood in that area. With this, careful analysis of the researchers suggests that the shift in the methodology applied became an essential factor to a more reliable forecast to help warn the community in possible flooding during rainy weathers. Using this as a key concept, the progressive anticipation may be structured in a way that allows a shift in the procedure to be used in analyzing the given data.

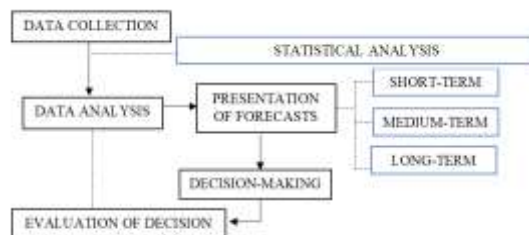


FIGURE 1. THE PROGRESSIVE ANTICIPATION MODEL

Figure 1 shows the Progressive Anticipation Model. It involves five (5) major parts namely: Data Collection; Data Analysis; Presentation of Forecasts; Decision-Making; and Evaluation of Decision. The data will be collected and analyzed using a specific regression analysis method. Upon successful analysis, the framework leads to the presentation of forecasts categorized into specific time-frame such as: short-term; medium-term; and long-term. The specificity of the period of each term is dependent to the data being supplied. The forecasts are options that will allow the decision-maker to choose the most suitable among the given. Such forecasts, when integrated in a software, are dependent to the database and references used in the internet to ensure a grounded basis for the options. The chosen decision will then be evaluated to be supplied in the database for future reference.

Some Problems Encountered in School Management

The big shift in the educational system and the global modernization has changed the students today in terms of their behaviors, interests, learning styles, and others. The modern curriculum, which is somehow guided by the Deweyan Education, specifies that the learner is the center orbited by programs necessary for its growth and development. One problem that is observed among students is the manifestation of unfavorable behaviors. Goldfarb, et. al. (2017) made a careful analysis of the family connectedness among student-adolescents to the different school problems like suspension occurrence, poor grades, and the like. In his study entitled “Association between participation in family activities and adolescent school problems”, it was identified that the

involvement of student-adolescents in activities like family dinner, attendance to religious events, and recreational activities is significantly associated with the school problems. However, the study does not have enough evidence to prove that protective relationship between families is significantly related to school problems. By using Progressive Anticipation in cases similar to the above study, school managers may able to select a decision based on educated forecasts. Below shows a sample procedure in the use of Progressive Anticipation in the above data:

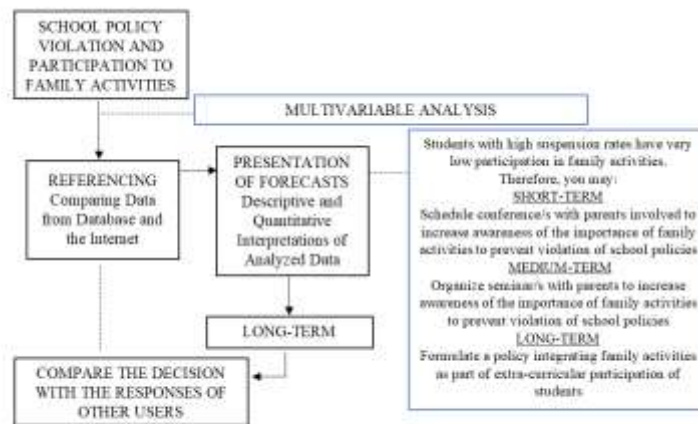


FIGURE 2. PROGRESSIVE ANTICIPATION AS USED IN A SAMPLE DATA

Another relevant problem is the inconsistencies in the implemented policies in school. There are occasions that school managers tend to disregard the written policy to make judgments favorable or convenient to recipients. As observed, many take this as unjust use of authority especially when comparisons arise from previous decisions. Through progressive anticipation, the school managers will be able to see the possible loop holes in the existing policies. The use of policy briefs may be able to statistically strengthen the current policies or formulate new ones to establish a more stable environment among stakeholders.

Big Data Analysis for Decision Support System

Heripracoyo & Kumiawan (2016) discussed in their study the significance of big data today. The analysis of big data can further improve the world economy, productivity, and competitiveness of enterprises. In school management, the forecasts will be based on the collected data stored in a database for analysis. Below shows the software development and implementation stage for the integration of computer data analysis to school decision-making:

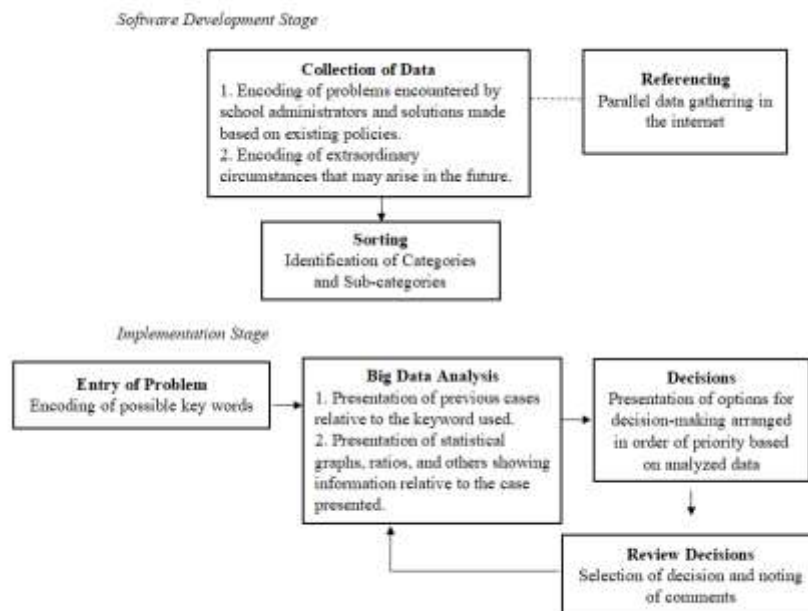


FIGURE 3. DATABASE FRAMEWORK

Most people thought that big data is only defined based on its volume or size. It can be further defined in terms of its variety and velocity. The collection of cases from different schools, colleges, and universities will greatly contribute in the variety of fragments to be analyzed and presented. Furthermore, velocity is attributed to big data because it goes away with the tedious and long-working hours of deliberations of cases to arrive at a decision.

In their research methodology, the researchers started with the literature study of big data by collecting information to create a prototype big data application. After this, samples were collected to research object which was a sample from a SQL server database. The database installed was MongoDB (noSQL) that undergone a series of experimentation for verification of quality performance. MongoDB was seen to be advantageous because: (1) it ensures access speed by user; (2) it is in document model; and (3) it has a flexible schema which allows easy communication for programmers.

Data-based Decision-Making (DBDM) Intervention

Many reforms have been encountered in the past years due to the modernization of the educational system. Team-teaching and other collaborative practices in teaching have been introduced to adapt to the changes experienced. Professional Learning Communities (PLCs) were also developed to ensure that teaching strategies may compliment the learning styles of students. In terms of school management, policies were based on statistical figures by carefully analyzing the collected data. Stecker, et. al. as cited in Keuning, et. al. (2017) discovered that the use of data is beneficial for learners with difficulties in studying to adjust the approach timely. In the study, DBDM was decomposed into four areas namely: (1) analyzing and evaluating data; (2) setting SMART (Specific, Measurable, Attainable, Relevant, Time-bound); (3) choosing strategies to accomplish the goals set; and (4) executing the chosen strategies. Data management becomes significantly important to allow careful study to improve the educational programs. In the experiment conducted, DBDM influenced student performances positively. Researchers still see that the results can still be investigated to reach its full potential. An introduction of the Progressive Anticipation model may allow the structured way of analyzing big data and continuously present innovative programs for school development.



FIGURE 4. Schematic Overview of DBDM

Data Culture

Lai & Schildkamp (2013) identifies that Data-based Decision-Making is best implemented in academic institutions by which members feel the need to critically look at the data, make reflections of their functions, and open to change their practice when results reveal a need to do so. A “climate of trust” is basically an essential factor to establish a data culture. This further emphasizes that data are not used to make judgments but to establish a well-grounded basis to support a certain decision. Beyond the Existing Practice

Traditional focus-group discussions and collaborative meetings largely contributed in the decisions made by school managers in the past. At times, many ask for the aid of consultants to provide the experience and expertise necessary in resolving faced cases. But the changing times has provided opportunities to resolve these cases with ease. The use of a computer software in the analysis and presentation of options for decision-making is grounded from the different perspectives of educational institutions locally and abroad. The extensions of networks created by this program relatively enact the response of the institutions using it to be globally competitive.

Neumann (2018) discussed the concept of power in school. He mentioned that power does not flow linear only from the top authority to the students. Thus, he emphasized that it is more of a web than a river flowing one way. It moves and grows in different directions as it affects the members of the community. As viewed in this study, power significantly involves the other stakeholders than the school administration. In Progressive Anticipation, it centers the result of decision-making to the student whether it directly involves them or not. Power is significantly distributed to ensure that no one is entirely powerful and no one is entirely powerless. Decisions will be founded on different views and not on the isolated perspectives of school managers.

In relation to this, Stones & Hatswell (2017) discusses Choice Theory and Lead Management in school cohesion and performance. In this study, the Choice Theory explains that power and freedom are powerful genetic needs to support commitment

and motivation. If there is confusion in the decisions and policies, it greatly threatens the social survival of students. As specified on the above narratives, the center of the decision-making process is the student.

Rock as cited in this study further explains that humankind needs status, certainty, autonomy, relatedness, and a sense of fairness to ensure that the environment is safe. Collaborative practices like dialogues and exchange of written opinions through write-ups may aid in the variety of fragments to be uploaded in the database. With this, it ensures the variety of sources as basis for decisions.

Summary and Conclusion

School administrators, mostly consist of academic and non-academic service heads, are entrusted to carry on the duty of giving the final say in decisions to be undertaken. Time-constraints was observed to be one of the key challenges in deciding. Most school heads often gather recommendations from delegated officials to tediously study the problems encountered. Many are still anxious with the options they provide due to the limited experience and data they have acquired for the most suitable decision.

The study greatly emphasized the role of progressivism in decision-making. The continuous vision for growth and development through innovations and constant study of things will allow a more fruitful experience for the students. It was repeatedly mentioned that the students are the center of this philosophy. The problem-solving approach, as one of the features of progressivism, puts the learners as the key beneficiary of all decisions to be made in school. Instruction, discipline, services, facilities, and others should all revolve around the welfare of the learner that is the center. The Deweyan perspective also highlights the significance of the learner in terms of its welfare. Experiences from programs such as co-curricular or extra-curricular activities should always be in consideration to the development of the students. This proves that learners learn by doing through the experiences taken from his formative environment which is the school.

Progressive Anticipation is being introduced as a forecast methodology in order to come up with the most suitable decision. It involves the careful analysis of the case/s presented to bring out the best options for easy decision making. Forecasting allows the decision-maker to respond accordingly as he/she sees the possible consequences that may occur after the delivery of the decision. With such framework, the study allowed to guide the administrators in forming the best solutions relative to the commonly encountered problems in school.

Though the final decision comes from the top management, power was identified to be present among all other stakeholders. Participation becomes a vital role in the decision-making process. The study significantly recognizes the importance of each member from the collection of data to the evaluation of decisions given.

To adapt to the changes of modern education, it was proposed in this study the integration of a computer software that will act as a database of school information necessary for decision-making. Using the Progressive Anticipation, it will allow the decision-maker to view the best options shown as short-term, medium-term, and long-term actions forecasting relative results. Furthermore, the database reflects the perspectives of different schools and universities in addressing the same case encoded as fragments.

REFERENCES

- [1] D'AGNESE, V. (2017). The Essential Uncertainty of Thinking: Education and Subject in John Dewey. *Journal of Philosophy of Education*, 51(1), 73–88.
- [2] FREDHOLM, A. (2017). Reconsidering school politics: educational controversies in Sweden. *Curriculum Journal*, 28(1), 5–21.
- [3] GOLDFARB, S. S., LOCHER, J. L., PRESKITT, J., BECKER, D., DAVIES, S. L., & SEN, B. (2017). Associations between participation in family activities and adolescent school problems. *Child: Care, Health & Development*, 43(3), 361–368.
- [4] HERIPRACOYO, S., & KURNIAWAN, R. (2016) Big Data Analysis with MongoDB for Decision Support System. *Telkonnika*, 14(3), 1083-1089.
- [5] KEUNING, T., GEEL, M., & VISSCHER, A. (2017). Why a Data-Based Decision-Making Intervention Works in Some Schools and Not in Others. *Learning Disabilities Research & Practice (Wiley-Blackwell)*, 32(1), 32-45.
- [6] KING, D., & COUGHLIN, P. K. (2016). Looking Beyond RtI Standard Treatment Approach: It's Not Too Late to Embrace the Problem-Solving Approach. *Preventing School Failure*, 60(3), 244–251.
- [7] LESCA, H., & LESCA, N. (2014) Strategic Decisions and Weak Signals: Anticipation for Decision-Making. *FOCUS. Business, Management, and Finance Series*, pp. 73-91.
- [8] NEUMANN, J. W. (2018). How power really works in schools. *Phi Delta Kappan*, 99(8), 30-35.
- [9] PLITNICK, T. A., MARSELLOS, A. E., & TSAKIRI, K. G. (2018). Time Series Regression for Forecasting Flood Events in Schenectady, New York. *Geosciences (2076-3263)*, 8(9), 1–20.
- [10] STONES, R., & HATSWELL, J. (2017). Applying Choice Theory and Lead Management to School Cohesion and Performance. *International Journal of Choice Theory & Reality Therapy*, 37(1), 31-39.
- [11] VAZQUEZ, R., AMARIS, H., ALONSO, M., LOPEZ, G., IGNACIO MORENO, J., OLMEDA, D., & COCA, J. (2017). Assessment of an Adaptive Load Forecasting Methodology in a Smart Grid Demonstration Project. *Energies (19961073)*, 10(2), 1–23.

AUTHOR

First Author – Paolo Antonio C. Noceda, MAEd, LPT; Information and Communication Technology Academy Inc – Assistant Principal and Homeschool Head; PhD Educational Management Student and Professor of Research and Statistics