

## CAREER TRACKING EXAMINATION SYSTEM OF INCOMING SENIOR HIGH SCHOOL STUDENTS USING PREDICTIVE ANALYTICS

Rojhonniet T. Mola<sup>\*1</sup>, Mark Joseph Padua<sup>2</sup>, Judilyn Taguba<sup>3</sup>, and Angela I. Mayordo<sup>4</sup>

<sup>\*1</sup>College of Computer Studies, Trimex Colleges, Biñan, Laguna, Philippines  
n.mola1104@gmail.com<sup>1</sup>

<sup>2</sup>College of Computer Studies, Trimex Colleges, Biñan, Laguna, Philippines  
paduamark16@gmail.com<sup>2</sup>

<sup>3</sup>College of Computer Studies, Trimex Colleges, Biñan, Laguna, Philippines  
judilyntaguba24@gmail.com<sup>3</sup>

<sup>4</sup>College of Computer Studies, Trimex Colleges, Biñan, Laguna, Philippines  
alegna.mayordo@gmail.com<sup>4</sup>

**Abstract:** The arising problem the researchers saw was the need to systematically predict the career tracks of the incoming senior high school students of Trimex Colleges. This need resulted to the creation of this study which primarily aims to develop a system for the said cause. It includes creation of a module that generates the questions and answers thereof and suggests possible course programs for the examinee depending on their scores.

Career Tracking Examination System for Incoming Senior High School Students of Trimex Colleges Using Predictive Analytics is the proposed system that provides information about the school and useful functionalities which could be a big help, especially for school matters.

As a whole system "Career Tracking Examination System for Incoming Senior High School Students of Trimex Colleges Using Predictive Analytics", it provides help for incoming Senior high school students to take their entrance exam for Trimex online. Appreciate that school and with innovative technology to be available to incoming senior high student learning and innovative technologies.

**Keywords:** Career Tracking, Examination, Information Technology, Predictive Analytics

### 1. INTRODUCTION

This study known as Career Tracking Examination System of Incoming Senior High School Students Using Predictive Analytics is a predictive system which helps senior high school students in their future program courses. This is an innovative idea from the researchers that would help Trimex to predict the number of enrollees per program courses in upcoming collegiate year.

<sup>[1]</sup>A vocation self-evaluation is a vital device that can help recognize conceivable roads on a lifelong way for a representative and be the instrument that opens up a correspondence between the worker and his or her manager on how best to continue [Eastwood, 2015]. The system generates the questions and answers for the facilitator and easily suggests suitable program courses depending on the examinee's score.

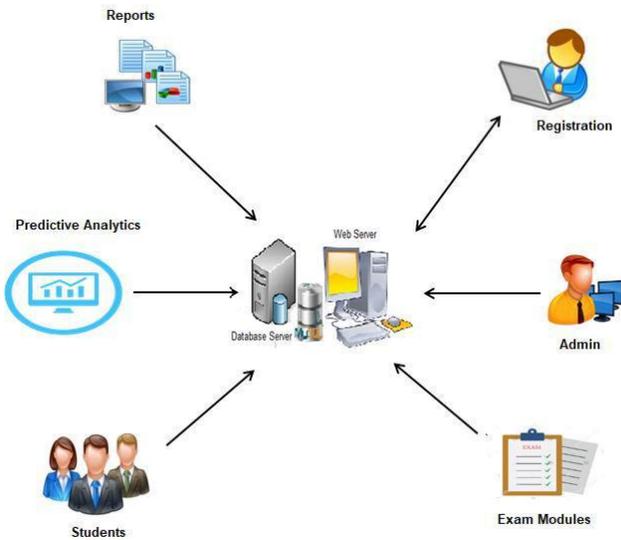
The system will also help the students who are still undecided on their career track. <sup>[2]</sup>Vocation development is essential in young people and in this way, it was viewed as significant to examine this angle to be specific profession development among juvenile. In their paper an endeavor has been made to contemplate the profession development in connection to the level of goal in teenagers [Bishnoi & Kumar, 2014]. Systematically predicting career track for incoming senior high school students would help them as they choose their program courses.

This would also motivate those who already know what career they wanted to pursue as they will study more to

satisfy the score requirement for their program courses. It is also vital for the incoming senior high school students to predict their career track as it will help them be prepared on their future careers. <sup>[3]</sup>Profession appraisal and fitness tests and a word related intrigue stock, then again, will demonstrate the understudy's qualities and interests. Vocation backing projects will likewise help and guide understudies in picking the correct track for themselves. There are four noteworthy tracks in the SHS program. Since the substance of the subjects that the understudies will take in Evaluations 11 and 12 rely upon their picked vocation track, they should take additional consideration in settling on their decision [Briones, 2013].

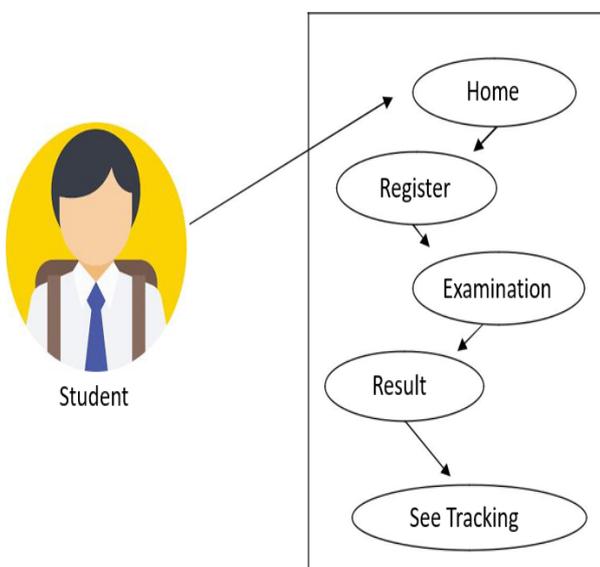
However, it is also seen that financial also affects the track of the senior high school students. On the study led by Jamabo in 2014, it was discovered that the parental financial status has a solid effect on youth's professional desire. This is the main reason in the creation of K+12 program under the Aquino Administration which was crafted last 2016 on the sunset of his presidency. K+12 has four (4) tracks: General Academics and Subjects, Technical, Vocational and Livelihood Education, Humanities and Liberal Arts, and Sports and Sciences. This helps the K+12 graduates to have the option of working or going to college.

## 2. SYSTEM DESIGN



**Fig. 1 System Process**

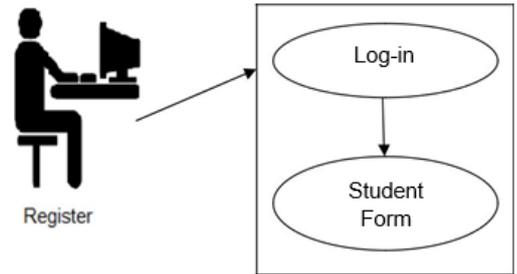
The figure above shows the different components of the Career Tracking Examination System for Incoming Sr. High School of Trimex Colleges Using Predictive Analytics. There will be users like the Admin, who administer users account and reports, register who will be registered to use the system, Predictive Analytics that will analyze the course that is suitable for the examinees, Students who will take the exam after being registered, Report communicate information which has been compiled as a result of research and analysis of data and of issues. Exams Modules handles all the exams.



**Fig. 2 Student Flow**

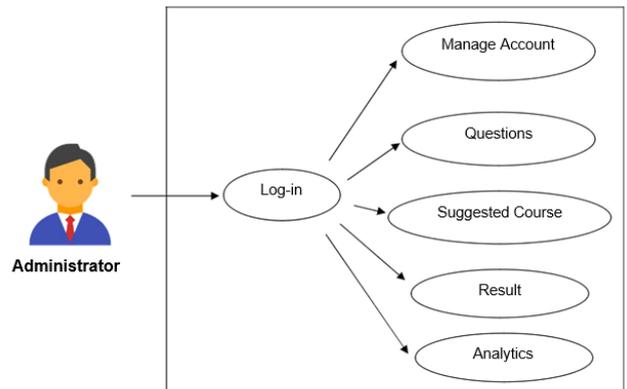
Fig. 2 shows the process the incoming senior high school students should undergo before seeing their suggested

career track. They should go to the career tracking page and register. After this, they should take the exam and see the result which will show them the suggested career track based on the score they got on the exam.



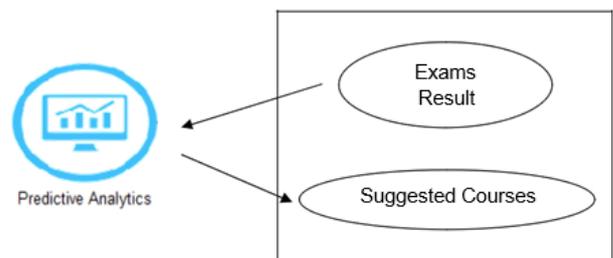
**Fig. 3 Registration Flow**

Fig. 3 shows the registration process for the incoming senior high school students who will take the career tracking examination.



**Fig. 4 Administrator's Module**

In Fig. 4 is the workflow for the administrators. They can manage the entire users of the system, questions being generated, add/remove program courses, and see result for a certain examinee and the analytics of the system.



**Fig. 5 Predictive Analytics Process**

Fig. 5 is how the suggested program courses are being generated through the Predictive Analytics. After the score has been generated Predictive Analytics does the analyzing and releases the suggested program courses based on the generated score.

After the student's requirements were positively validated, the student will be set for the examination. Fig. 7 shows us the homepage for the career tracking system which the students will undergo.

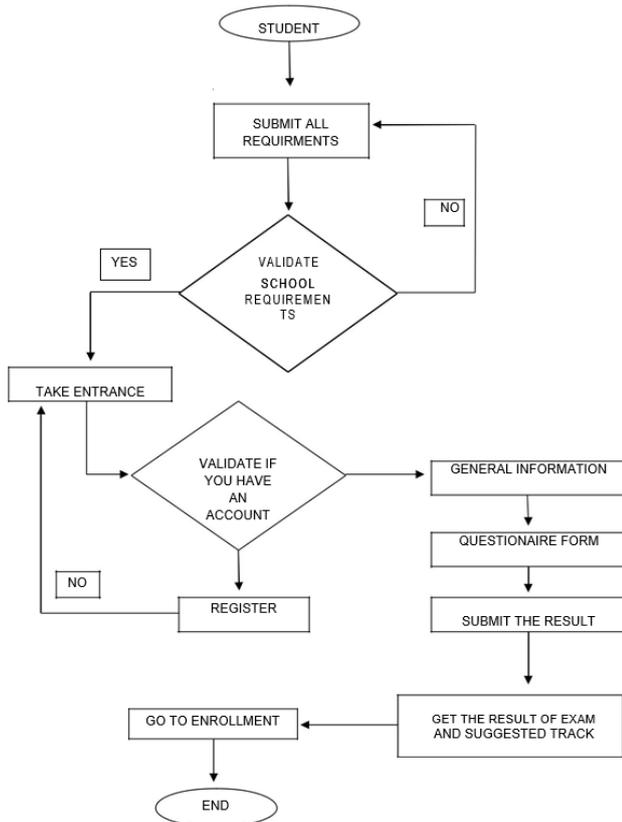


Fig. 6 System Workflow

Fig. 6 shows the entire system workflow from the pre-exam which includes, but not limited to, submitting all essential documents to the registrar which will validate them. After which, the registrar will determine if the student is to take the exam or not depending on the requirements submitted. If the student will be permitted, he/she will be subject to account creation (Fig. 2). In case an account was already set up for him/her prior to the registration, the student shall proceed to the examination. After the successful examination, the students will be able to view their suggested program courses depending on the ratio of the scores per subject area.

**TECHNOLOGY AND PROCESS**

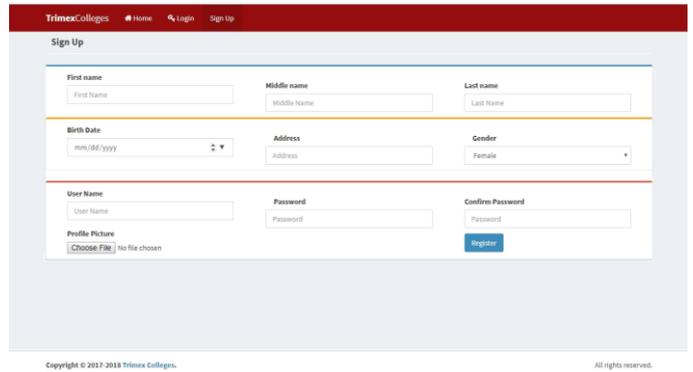
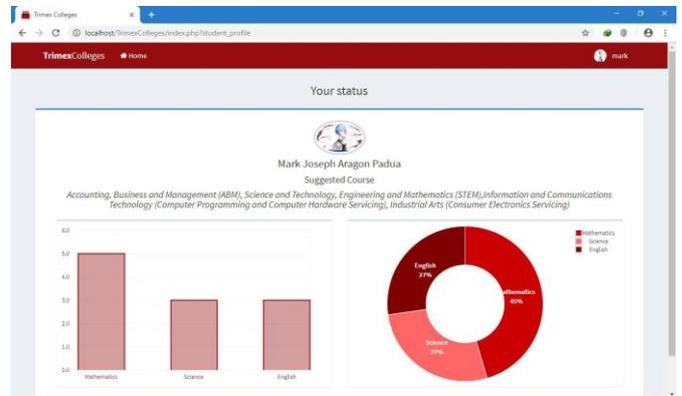


Fig. 8 Registration Page

If the student don't have an existing account to take the examination, he/she will be subject to create an account which Fig. 8 shows. The researchers made it simple and easy as



it will only require the essential details to set up the account.

Fig. 9 Ratio Final Page

After the successful examination, the Predictive Analytics will show the ratio of scores per subject area in Bar and Pie Graph and the list of program courses. This will be the last and final page for the examinee's end and the most essential page for the career tracking system.

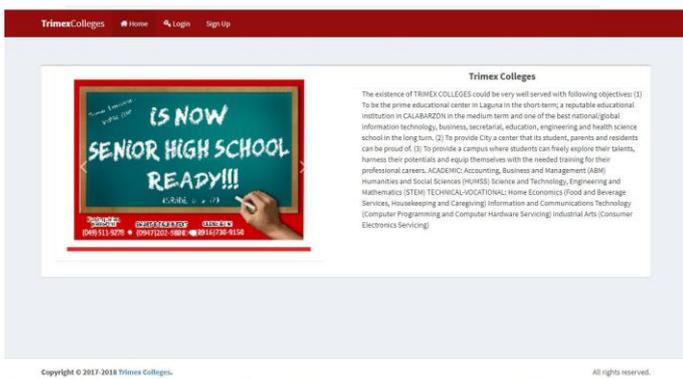
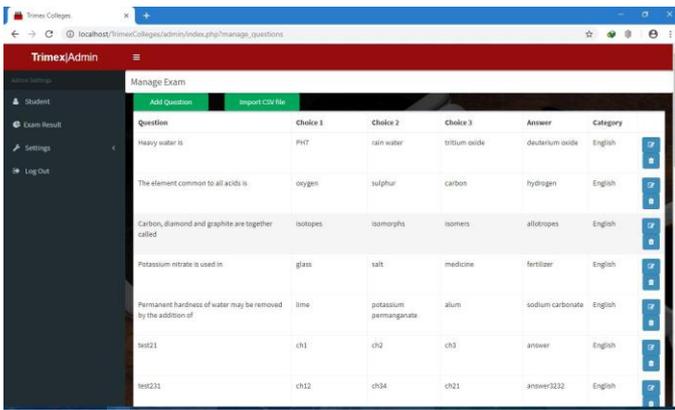


Fig. 7 Home Page



**Fig. 10 Questionnaire Modification Page**

Fig. 10 shows how the questions can be modified by the administrators. This page applies only to the users tagged as administrators for the system.

### 3. SYSTEM EVALUATION

Technological innovations are like other inventions and ideas that requires evaluation and testing to further see the details and other occurrences. This is not a new technique but a basic method for each ideas and innovations. As to this event, an international standard was set for everyone to use – the ISO 9126.

[4]ISO 9126 is a software standard evaluation set by the International Standard Organization which includes six (6) software quality. The six (6) software quality are listed below:

1. Functionality – if the software is working according to the programmed workflow.
2. Reliability – tackles the software’s error tolerance and recoverability.
3. Usability – the software must be user-friendly and easy to use.
4. Efficiency – software must respond accordingly, efficiently and precisely on every command.
5. Maintainability – tackles about how easy the software can be maintained.
6. Portability – software can be accessed through different browser’s version and screen resolution and is not hard to install.

The researchers evaluated the system in accordance to the ISO 9126 using the pen and paper survey evaluation to the respondents. The researchers gathered fifty (50) students to evaluate the system. The respondents were asked to use the software and evaluate it on a pen and paper survey form. On their evaluation, the researchers qualify the weaknesses and strengths of the system.

### I. Likert Scale

Likert Scale		
Verbal Interpretation	Range	Rate
Strongly Agree.	4.6 - 5.0	5
Agree	3.7 - 4.5	4
Neither agree nor disagree	2.8 - 3.6	3
Disagree	1.9 - 2.7	2
Strongly Disagree	1.0 - 1.8	1

**Graph No. 1 Likert Scale**

### II. Functionality

Functionality	
Statements	Rate
The system performs the tasks required.	4.35
The system shows the result as expected	4.55
The system interacts with another system	4.3
The system prevents unauthorized access	4.45
<b>Average</b>	<b>4.4</b>

**Graph No. 2 Functionality**

### III. Reliability

Reliability	
Statements	Rate
Most of the faults in the software been eliminated over time	4.45
The system capable of handling errors	4.45
The system resumes working and restores lost data after a failure	4.15
<b>Average</b>	<b>4.35</b>

**Graph No. 3 Reliability**

### IV. Usability

Usability	
Statements	Rate
The user comprehends the use of the system easily	4.65
The user learns to use the system easily	4.2
The user uses the system without much effort	4.55
The interface looks good	4.25
<b>Average</b>	<b>4.4</b>

**Graph No. 4 Usability**

**V. Efficiency**

Efficiency	
Statements	Rate
The system responds quickly	4.45
The system efficiently utilizes resources	4.25
<b>Average</b>	<b>4.35</b>

**Graph No. 5 Efficiency**

**VI. Maintainability**

Maintainability	
Statements	Rate
Faults are easily diagnosed	3.85
The system continues functioning if changes are made	4.05
The system is tested easily	4.25
<b>Average</b>	<b>4.05</b>

**Graph No. 6 Maintainability**

**VII. Portability**

Maintainability	
Statements	Rate
The system performs fast in different web browser's version	4.4
The web browser continues to perform without a vital program that hard to install	4.7
<b>Average</b>	<b>4.55</b>

**Graph No. 7 Portability**

**VIII. Overall Rating**

Overall Rating		
Area	Rate	Verbal Interpretation
Functionality	4.4	Agree
Reliability	4.35	Agree
Usability	4.4	Agree
Efficiency	4.35	Agree
Maintainability	4.05	Agree
Portability	4.55	Agree
<b>Overall Rating</b>	<b>4.35</b>	<b>Agree</b>

**Graph No. 8 Overall Rating**

On Graph No. 8 shows the overall rating of the software after evaluating the six (6) areas identified by the ISO 1926. It can be seen that the overall rating is 4.35 which translates to AGREE. On this basis, the respondents agreed that the software is helpful and innovative.

The statements were formulated in accordance with the existing ISO 9126, the international software standard set by the International Standard Organization.

However, on the Graph No. 8, it can be seen that the lowest rating was given to Maintainability. The respondents has a very limited access as to the examinees. In this event, they cannot do anything about the system errors and faults.

On the other hand, it can be seen that the highest rating was given to the Portability. This was due to the availability of different browser versions and screen resolutions in different computers used to test the software. The respondents have a wide range of browser options to use to access the software.

**4. CONCLUSION AND RECOMMENDATION**

**I. Conclusion**

Based on the evaluation, treatment and analyzing of the data, the researchers came up to the conclusions listed below:

- a. The Career Track Examination System was available and can be viewed offline through any kind web browser.
- b. The system is user-friendly and can be used by student easily.
- c. This system enhances the thinking skills of the users since it requires logical thinking and decision making.

**II. Recommendation**

The researchers humbly recommends the following:

- a. The identical educational online examination can be made but with more questions and levels of difficulties.
- b. The system could be developed or improved into other platforms such as mobile android application.
- c. The researchers are looking forward on adding a much more complex way of using the system to predict a strand for the examinee.
- d. The researchers are looking forward on adding an offline version of the system.

**5. REFERENCES**

- [1] James Eastwood, "Why is a career assessment important?," [https://www.successfactors.com/en\\_us/lp/articles/career-assessment.html](https://www.successfactors.com/en_us/lp/articles/career-assessment.html), 2015.
- [2] Sarah Mbwale, "Career choice: A challenge for high school students," <http://repository.unam.na/handle/11070/1621>, 2014
- [3] Leonor M. Briones, "Guiding our Senior High-School students on their career path," <https://www.businessmirror.com.ph/guiding-our-senior-high-school-students-on-their-career-path>, 2013.
- [4] Karin Guill, "Academic tracking is related to gains in students' intelligence over four years: Evidence from a

propensity score matching study,”  
<https://www.sciencedirect.com/science/article/pii/S0959475216301633>, 2017.

<https://www.tandfonline.com/doi/abs/10.1080/03098770701625761>, 2013

- [5] Chuan De Lian and Louise Higgins, “The University Entrance Examination System in China,”