AN EXPLORATORY APPROACH TO LEARNERS' ACADEMIC ENGAGEMENT ON MODULAR LEARNING

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ABSTRACT

This study determined the factor structure of learners' academic engagement to modular learning. The exploratory sequential mixed methods design was utilized that started with qualitative phase then followed by quantitative data collection and analysis. More specifically, it aimed to construct a learners academic engagement scale in a sample of learners. In the qualitative phase, there were ten (10) learners who participated in the in-depth interview and seven (7) learners participated in the focus group discussion. Moreover, a total of 150 learners have been selected as respondents in quantitative phase. Meanwhile, the data were analyzed using the thematic analysis and exploratory factor analysis (EFA). The results show that a total of four themes have emerged in the qualitative findings that put emphasis on learners' experience, supervision, connectivity, and device platforms inadequacies. In addition, the EFA results showed two underlying dimension of learners' academic engagement. Based on the qualitative data analysis, themes generated from learners' academic engagement to modular learning are learners experience, supervision, connectivity and device platforms inadequacies. In the exploratory factor analysis, there were 2 factors derived which include: time management and learners engagement. Based on the reliability test score revealed on the learners' academic engagement on modular learning is very high with an overall Cronbach's Alpha value of .721. It was found out that subscale for time management (a = .726) and learners' engagement (a=732) is very high also and above 0.70. This means that the tool is being used in the study has good internal consistency.The final instrument which can be used learners academic engagement to modular learning contains 2 dimensions with a total of 9 items. Four emerging themes significantly emphasized on learners' academic engagement to modular learning include: learners experience, supervison, connectivity and device platforms inadequacies. Results revealed from the Exploratory Factor Analysis (EFA) two underlying dimensions occur from the learner's academic engagement such as learners engagement and time management. Reliability test revealed the results on learners' academic engagement on modular learning that the overall Cronbach's Alpha was .721 which interpreted as high. It means that the validity of the instruments was very high and suitable for using the instrument as a tool. Results from the Exploratory Factor Analysis revealed that there are 9 items of the questionnaire that are suitable for factor loadings. This means that these items are appropriate and pass the face validity for measuring tools in the study.

Keywords: *Learners Academic Engagement, Exploratory Sequential Design, Municipality of Matalam, Philippines*

INTRODUCTION

Most countries around the world have temporarily closed educational institutions to contain the spread of the virus and reduce infections (Tria, 2020) Face to face engagement of students and teachers within the school has also been suspended. The Philippines is in the process of adapting to the new normal form of education at present, and continuous innovations

of educators and active involvement of other stakeholders are the driving force for its success. For the continuity of education and for every school to still attain its mission and vision which is to provide quality education to every Filipino learner, the Department of Education implemented the Modular Distance Learning.

In addition, modular learning is the most popular type of Distance Learning. In the Philippines, this learning modality is currently used by all public schools because according to a survey conducted by the Department of Education (DepEd), learning through printed and digital modules emerged as the most preferred distance learning method of parents with children who are enrolled this academic year (Chen et al., 2020). This is also in consideration of the learners in rural areas where internet is not accessible for online learning.

Finally, the very idea behind modular learning is to deliver education that does not constrain the students to be physically present in the same location as the instructor. This way of continuous education and professional preparedness in various applied studies enables the student community to play a constructive role in their respective communities. Thus, the most important part of modular-mediated learning is not the system, it is the people who will be learning from that system. Nowadays, initiation and development of public oriented models of modular learning education has become essential for the exceptional and unexpected future conditions of the respective nation. This form of education trains the students in self-learning mechanisms while enhancing their intellectual and thinking abilities. Thus modular-mediated learning is gaining in popularity due to two inbuilt tools, 'Self-motivation' and 'Self-discipline'. Self-motivation is one's inner spirit; the self-drive that makes you capable of doing whatever you put your mind to do (Govender' N. & Khoza, S., 2017)

FRAMEWORK

This study is anchored on the Student Involvement Theory (Astin et al., 1985). Astin's theory seems to capture the foundational logic of engagement. Astin stated, quite simply, student involvement refers to the amount of physical and psychological energy that the student devotes to the academic experience". To clarify his intended meaning of involvement, Astin presented a list of similar verbs, these included "to partake", "join in", or "engage in". In his theory, he suggested a positive relationship between college student involvement and both personal and academic growth. He described student development as a function of the quantity and quality of the physical and psychological energy that students invest in the college experience such as absorption in academic work, participation in extra-curricular activities, and interaction with faculty or other institutional personnel.

METHOD

Research Design

In this study, the researcher utilized the exploratory sequential method of research. The exploratory sequential method will be used in presenting results on learners' academic engagement on modular learning. The exploratory sequential design will be used to obtain information concerning the status of the phenomena to describe "what exist" with respect to variables or conditions in a situation (Shuttleworth, 2008).

In this study, the researcher collected and analysed quantitative and qualitative data. It enabled a deeper and varied angle of viewing, listening, and understanding the reality of the

situation (Creswell et al., 2011).

On the same manner, the qualitative component included narratives which will be extracted from the lived experiences of the participants. Utilizing the convergent parallel method approach strengthened the results and counteracted the weakness of single individual methods. It enabled a deeper and varied angle of viewing, listening and understanding the reality of the situation (Creswell & Clark, 2011).

Respondents

A total of ten (10) participants will be invited for an in-depth interview and another seven (7) participants for the focus group discussions. The results of which will be used to identify the emerging themes and patterns, or responses as based on their shared experiences. They will be selected using the purposive sampling technique. This technique aims to achieve a homogeneous sample whose units share the same characteristics or traits. To attain homogeneity, the following criteria will be set: should be a full-time teacher in the higher education institution, and at least have three years tenure in the academe.

Instrument

To complete qualitative data, the researcher made use of a structured interview questions consisting of core and probe queries. The tools were already subjected to content validity and instrument reliability.

Statistical Tools

Mean and percentages was used to determine the teachers' perception on learners' academic engagement to modular learning.

Statistical mean is a certain kind of mathematical average that's very useful in computer science, and in machine learning. Simply speaking, the statistical mean is an arithmetic mean process, in that it adds up all numbers in a data set, and then divides the total by the number of data points.

Also, a percentage (from Latin per centum "by a hundred") is a number or ratio expressed as a fraction of 100. It is often denoted using the percent sign, "%", or the abbreviations "pct.", "pct"; sometimes the abbreviation "pc" is also used. A percentage is a dimensionless number (pure number).

Meanwhile, the notes that were obtained from in-depth interview and focus groups were analyzed using thematic analysis. This method emphasizes pinpointing, examining, and recording patterns (or "themes") within data. Themes are patterns across data sets that are important to the description of a phenomenon and are associated to a specific research question (Boyatzis, 1998).

RESULTS AND DISCUSSION

Constructions Of Learners' Academic Engagement to Modular Learning Scale

Table 1 exhibits the suggested Checklist Survey Questionnaire to be Subjected for EFA which

reflected the learners' academic engagement scale components which are included in the checklist. The items reflect the fundamental topics, fundamental ideas/ assertions, issues demonstrated, and implications. There are 30 items on the survey questionnaires.

Table 1
Learners' Academic Engagement to Modular Learning Scale Items

ITEM

1. I always considered the challenge of preoccupying myself with the issues and problems with the modular means of learning.
2. I even give importance to the new means of learning through modular.
3. I had more time; I would busy myself more intensively with certain activities for modular learning.
4. I become so interested in a topic that I am unaware of anything else around me.
5. I am certain to have do best in my study which corresponds most to my personal inclinations.
6. I even spend my free time on topics on module, which are a part of my subject for that time.
7. I would spend time with the issues within my academic concern even without pressure from the outside.
8. I feel so inspired with my educational endeavor using modular learning.
9. I feel personal fulfillment through doing good in all my subjects.
10. I attribute high personal value to my academic accomplishments.
11. I was never doubted myself that I would study still even with the new normal way of learning.
12. I really want to preoccupy myself with connected to my view of earning good grader afterwards.
13. I would be able to tell you much about what we've covered in our lectures so far.
14. I always acquired a good overview of all my subjects.
15. I've been able to keep up with what we have learned.
16. I do not have to be afraid of comparisons with fellow students.
17. I can be satisfied with the knowledge I have acquired.
18. I can learn and do well in the modular class.
19. I admire the way the module materials were presented helped to maintain my interest.
20. I can manage the workload on this module that fitted with my personal circumstances.
21. I can easily follow the task on the module.
22. I tend to procrastinate more with modular classes
23. I like the sufficient opportunities were provided to check my understanding on the module.
24. I like the "freedom" offered by being able to peruse information on my own.
25. I get to do my work whenever I have a chance and not necessarily have to stress out about making it to every class meeting.
26. I love the way that I can work on my own pace and offers better time management
27. I assessed that it is easier to go do my own pace and I don't have to go on campus.
28. I can save my time and use it for studying.
29. I like the freedom to do things throughout my day.
30. I put together all the ideas or concepts from different subjects when completing assignments.

Dimensions of Learners' Academic Engagement

Testing of the proposed Questionnaire consisting of 30- item scale on Learners' Academic Engagement to Modular Learning. Prior to the proposed 30-item scale for Learners' Academic Engagement to Modular Learning underwent factor analysis, the Kaiser Meyer-Okin Measure (KMO) of Sampling Adequacy and Bartlett's test of sphericity was performed. Table 2 highlighted the results.

Table 2
KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.590
	Approx. Chi-Square	1590.270
Bartlett's Test of Sphericity	df	325
	Sig.	.000

The results displayed that the KMO test generated the value of .590 which is above the .5. This means the sample can be treated with EFA. Also, Bartlett's Test of Sphericity result yields a .000 significant value which tells that the data have patterned relationships, and factorability was assumed. Hence, there was empirical evidence to proceed with the factor analysis.

Derivation of Factors Structures for Learners' Academic Engagement to Modular Learning

To determine the number of factors, the 30-item scale was tested using an unrotated factor matrix with estimates of eigenvalues, percent of the variance, and cumulative variance. Eigenvalues represent the total amount of variance that can be explained by a given principal component. They can be positive or negative in theory, but in practice, they explain variance which is always positive. Under the Kaiser criterion, all components are dropped with eigenvalues under 1.0, this being the eigenvalue equal to the information accounted for by an average single item (Costello & Osborne, 2005).

Meanwhile, 2 factors were identified in the model with eigenvalues above 1. The loading factor for each item corresponds to a factor score which was above .40. This means, there was a sufficient correlation between factors and variables; hence, the item can be considered as part of the factor.

The Table 3 shows the pattern matrix using Principal Axis Factoring with a Promax rotation method of Promax with Kaiser Normalization. It can be observed in the results the loadings of items in the two factors are above .40. It can be supported by Field (2005) that .40 is recommended and necessary to obtain the desired factors. Furthermore, it can be observed that there is no item cross-loading or not loading at all which means that the items best represent their factors. It is emphasized by Hair et al. (1998) that loadings indicate the degree of correspondence between the variable and the factor, with higher loadings making the variable representative of the factor.

Table 3

Pattern Matrix Two-Factor Model

Items	Factor Loadings	
	1	**2**
1. I even give importance to the new means of learning through modular.		.531
2. I had more time; I would busy myself more intensively with certain activities for modular learning.	.502	
3. I am certain to have do best in my study which corresponds most to my personal inclinations.		.445
4. I would spend time with the issues within my academic concern even without pressure from the outside.		.459
5. I feel so inspired with my educational endeavor using modular learning.		.520
6. I feel personal fulfillment through doing good in all my subjects.		.580
7. I do not have to be afraid of comparisons with fellow students.	.788	
8. I get to do my work whenever I have a chance and not necessarily have to stress out about making it to every class meeting.	.780	
9. I love the way that I can work on my own pace and offers better time management		.470

Extraction Method: Principal Axis Factoring.
 Rotation Method: Promax with Kaiser Normalization.
a. Rotation converged in 3 iterations.

The item loading of each item to their factor indicates sufficient correlation between factors and variables, and thus can be considered as component of the factor. By using the EFA, the two-factor model of learners' academic engagement to modular learning with 30 items was developed as shown in table 5, namely: learners experience, supervision, connectivity and device and platforms inadequacies.

The items that do not fit with the factor were removed in the final questionnaire. More specifically, the items in factor included item 1 "I always considered the challenge of preoccupying myself with the issues and problems with the modular means of learning", item 4 "I become so interested in a topic that I am unaware of anything else around me", item 6 " I even spend my free time on topics on module, which are a part of my subject for that time", item 10 " I attribute high personal value to my academic accomplishments", item 11" I was never doubted myself that I would study still even with the new normal way of learning", item 12 "I really want to preoccupy myself with connected to my view of earning good grader afterwards", item 13 "I would be able to tell you much about what we've covered in our lectures so far", item 14 " I always acquired a good overview of all my subjects", item 15 "I've been able to keep up with what we have learned", item 17 " I can be satisfied with the knowledge I have acquired", item 18 " I can learn and do well in the modular class", item 19 " I admire the way the module materials were presented helped to maintain my interest", item 20 "I can manage the workload on this module that fitted with my personal circumstances", item 21 "I can easily follow the task on the module", item 22 "I tend to procrastinate more with modular classes", item 23 "I like the sufficient opportunities were provided to check my understanding on the module", item 24 "I like the "freedom" offered by being able to

peruse information on my own", item 27 "I assessed that it is easier to go do my own pace and I don't have to go on campus", item 28 "I can save my time and use it for studying", item 29 "I like the freedom to do things throughout my day", and item 30" I put together all the ideas or concepts from different subjects when completing assignments". do fit the factor loadings.

Reliability Test of the Scale

The instrument was evaluated for reliability to determine the internal consistency of items. It can be observed in the Table 4 that the overall reliability is high with a Cronbach's alpha value of .721. The subscale or dimension also is above the criteria of reliability above .70 alpha, namely time management (α=.726) and learners' engagement (a=732). This indicates that the tool has good internal consistency. This is supported by Nunnally (1978) that instruments used in basic research should have reliability of .70 or better.

Table 4

Reliability Analysis Learners' Academic Engagement on Modular Learning Scale

Scale	Cronbach's alpha
Time Management	.726
Learners' Engagement	.732
Overall Reliability	**.721**

Final Version of Learners' Academic Engagement to Modular Learning Mode

The final version of the instrument, which is the output of this study, is presented in the form provided in Table 5. From 30 items, the analysis suggests several issues on face validity based on the factor loadings on the items. Items that have small coefficient less than .40 are removed. This is supported by Hair et al. (2010) that those items having no sense and not reflective with the factor can be removed in the model. Also, Hair et al. (2010) loading coefficient can be set by the researcher to select only those items that best represents the factor, and those low coefficients may not be included in the factor structure.

By using the EFA, Learners Academic Engagement to Modular Learning Questionnaire was developed. This scale consists of 30 items. Specifically, a total of six (6) items for learners' engagement and (3) items for time management. The five-point Likert scale from 5-always to 1-never is shown below.

Table 5
Learners' Academic Engagement to Modular Learning Questionnaire

Items	5	4	3	2	1
Factor 1: Learners' Engagement					
1. I even give importance to the new means of learning through modular.					
2. I am certain to have do best in my study which corresponds most to my personal inclinations.					
3. I feel so inspired with my educational endeavor using modular learning.					
4. I feel personal fulfillment through doing good in all my subjects.					
5. I do not have to be afraid of comparisons with					

fellow students.

6. I had more time; I would busy myself more intensively with certain activities for modular learning.

Factor 2: Time Management

7. I would spend time with the issues within my academic concern even without pressure from the outside.

8. I get to do my work whenever I have a chance and not necessarily have to stress out about making it to every class meeting.

9. I love the way that I can work on my own pace and offers better time management

Legend:
   5 = Always
   4 = Often
   3 = Sometimes
   2 = Rarely
   1 = Never

CONCLUSION

Four emerging themes significantly emphasized on learners' academic engagement to modular learning include: learners experience, supervison, connectivity and device platforms inadequacies. Results revealed from the Exploratory Factor Analysis (EFA) two underlying dimensions occur from the learner's academic engagement such as learners' engagement and time management. Reliability test revealed the results on learners' academic engagement on modular learning that the overall Cronbach's Alpha was .721 which interpreted as high. It means that the validity of the instruments was very high and suitable for using the instrument as a tool. Results from the Exploratory Factor Analysis revealed that there are 9 items of sets of questionnaires that are suitable for factor loadings. This means that these items are appropriate and pass the face validity for measuring tools in the study.

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