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# Socio-Psychological Attributes, Instructional Materials, Learning Modalities and Academic Performance of Agriculture Students in Mindanao, Philippines

Mahalia M. Acuňa, Ph.D. [1], Judith D. Intong, Ph.D. [1]
1 − Central Mindanao University, University Town, Musuan, Bukidnon

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**Abstract**

The study explored the best fit model on socio-psychological attributes, instructional materials and learning modalities on academic performance of senior agriculture students in Mindanao SUCs. Data were gathered from 416 senior students enrolled during the Second Semester, SY 2022-2023 in three (3) State Universities. The study aimed to describe the socio-psychological attributes, find out the learning modalities used, determine the extent of use of IMs and assess the academic performance of senior agriculture students. It also correlated the students' socio-psychological attributes, learning modalities, instructional materials and their academic performance; and identified variables singly or in combination that best predict academic performance.

The senior agriculture students in Mindanao SUCs were regular students, non-delinquent, with literate parents and big families earning low income. They have favorable attitudes toward their studies, determined and adaptive to stressful situations. Online learning was sometimes used during the COVID-19 pandemic in teaching-learning basic agriculture board courses with syllabus, audio-video presentations and illustrative pictures. PowerPoint presentation was always used by the students who also preferred handouts, audio/video presentation, power point and infographics. They mostly utilized IMs due to its relevance and usefulness, availability and learner preferences. The students had very high academic performance and was significantly associated with their mother's educational attainment, gross monthly income, availability of IMs and learning modalities with face-to-face learning modality and availability of IMs particularly audio-video presentations that best predict academic performance of senior agriculture students in agriculture board courses.

*Keywords: Academic performance, grit, learning modalities, Ims*

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INTRODUCTION

Academic performance of students is a key feature in education. It is even considered to be the center around which the whole educational system revolves (Rono, 2013). It shows the results of how do students fare during examinations. The ipl.org (n.d.) stressed that its importance is not only evident to the students but also to the schools as it measures the success of their education process. It is often used to measure how far an academic institution has achieved its educational goals. Narad and Abdulla (2016) stressed that it determines the success and failure of an academic institution. Hence, topmost priority of the tertiary education institutions is to provide quality education to its students as mandated by Republic Act 10393, "an act promoting universal access to quality tertiary education... in state universities and colleges (SUCs)."

To achieve this goal, SUCs strive to continue strengthening its academic pursuit for excellence as it tries to fulfil its functions. However, the COVID-19 drastically changed the landscape of the education system globally. The Philippines, like most countries in the world, faced insurmountable uncertainties on how to go about continuing the delivery of education despite the pandemic.

The Commission on Higher Education (CHED), in its Memorandum Order No. 04, series of 2020 issued last September 20, 2020 gave Higher Education Institutions (HEIs) the academic freedom to implement available distance learning, e-learning, and other alternative modes of delivery to students amide the pandemic (CHED, 2020).

However, the implementation of online learning posed different risks, problems and challenges to both the teachers and students, especially in the HEIs (Bao, 2020). It affected the students' attitudes, behavior and emotions towards their studies, education, and school attendance (Mirahmadizadeh et al., 2020). Likewise, Mailizar et al. (2020) also revealed that the lack of knowledge, skills and devices, internet connection, irrelevance and issues with system access were the problems experienced by teachers and students during the pandemic. Likewise, most teachers did not have enough time to prepare for the new learning modality to immediately adopt, some did not have enough information on appropriate IMs for their classes, nor have enough training to produce or utilize IMs and many other challenges they faced (Vargas-Ramos et al., 2022). Such changes in the learning modality had a great impact on the quality of learning experiences of the students who suffered learning loss and mental stress due to education disruptions caused by the COVID-19 pandemic (Marcelo, 2023). In fact, results of the Licensure Examination for Agriculturists showed that some SUCs did not even get the 50% passing rate as against their number of board exam takers. Finally, whether there is pandemic or not, sustaining the provision of quality education remains to be the ultimate goal of every HEI. The challenges of the education sector had become increasingly varied that necessitates investigation to identify the most suitable learning modality and

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appropriate instructional materials to enhance the learner's academic performance, hence the conduct of this study.

Objectives of the Study

Generally, the study primarily aimed to determine the relationship between the socio-psychological attributes, instructional materials and learning modalities on the academic performance of the senior agriculture students during the COVID-19 pandemic. Specifically, it aimed to:

1. describe the socio-psychological attributes of the senior agriculture students in terms of household size, parents' educational attainment, parents' occupation, gross monthly income, attitudes toward studies, stress coping strategies and grit.
2. find out the learning modalities used in agriculture board courses.
3. determine the extent of use of instructional materials in agriculture board courses by the senior agriculture students in terms of availability, accessibility, frequency of use, quality, and preferred IMs.
4. assess the academic performance of the senior agriculture students.
5. ascertain the relationship between the dependent and independent variable; and
6. identify which among the variables best predict academic performance of the senior agriculture students;

METHODOLOGY

Data were gathered through a survey questionnaire from the 416 senior agriculture students who were officially enrolled in the second semester of School Year 2023-2024 in Mindanao SUCs recognized by CHED as Center of Excellence in Agriculture Education.

The data gathered were statistically analyzed using descriptive statistics such as means, frequency counts, and percentages. Pearson product-moment correlation was utilized to determine the relationship between the independent and dependent variable. while multiple linear regression analysis was employed to determine the variable that best predicts academic performance of the senior agriculture students.

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RESULTS

More than three-fourths (76%) of the students were from SUC1, less than one-fourth (15%) from SUC II and less than one-tenth (9%) from SUC III. Most (80%) of them were regular while less than one-fourth (20%) were irregular students. Most (84%) were non-delinquent students, with almost one-tenth (9%) on warning and a few of them (7%) on probationary status. As to their General Weighted Average (GWA), the average mean was 1.92 with more than one-half (60%) obtaining a GWA of 1.51-2.0 while 15% obtained the highest GWA of 1.0-1.50. Almost two-thirds (64%) of them had at least 4-5 members in the family. Almost one-fourth (21%) had fathers with elementary level and more than one-fifth (22%) of mothers attained college level of education. Almost one-half (44%) of the students' fathers were farmers, while more than one-third (38%) had mothers who were government employees. Almost one-half (41%) belonged to families who earned at least PHP 1.00-10,000 monthly.

Table 1 shows the summary of the respondents' attitudes toward studies, grit and coping strategies during the COVID-19 pandemic. The senior agriculture students in Mindanao SUCs have favorable attitude toward their studies during the CODVID-19 pandemic with an overall mean of 3.99. The students' grit and perseverance had an overall mean of 3.79. They had highly adaptive coping strategies with an overall mean of 3.72 and are found to be highly adaptive to stress as they practiced religiousity (4.75), problem solving (4.40), relaxation and recreation (4.25), emotional resilience (4.) social support (4.00), overactivity (3.90), cognitive reappraisal (3.50), tolerance (3.50), and substance use (1.20). This means that the students, despite the COVID-19 pandemic, had positive attitude towards their studies under a new mode of learning.

Table 1. Summary of psychological attributes of senior agriculture students

| INDICATORS | OVERALL MEAN | QUALITATIVE INTERPRETATION |
|---|---|---|
| Attitudes Toward Studies | 3.99 | Favorable |
| Grit | 3.79 | Determined |
| Stress Coping Strategies | 3.72 | Adaptive |
| Grand Mean | 3.83 | Favorable/Determined/Adaptive |

Legend:

| Scale | Range | Descriptive Rating | Qualitative Description |
|---|---|---|---|
| 5 | 4.50-5.00 | Strongly Agree | Highly Favorable/Adaptive/ Determined |
| 4 | 3.50-4.49 | Agree | Favorable/Adaptive/ Determined |
| 3 | 2.50-3.49 | Undecided | Moderately Favorable/Adaptive/ Determined |
| 2 | 1.50-2.49 | Disagree | Less Favorable/Adaptive/ Determined |
| 1 | 1.00-1.49 | Strongly Disagree | Not Favorable/Adaptive/ Determined |

As to the learning modalities used in teaching-learning agriculture board courses, purely online was sometimes used (3.34) during the Second Semester of SY 2019-2020, used all the time from the First Semester of SY 2020-2021 to the First Semester of SY 2021-2022 and used most of the time in the Second

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Semester of SY 2021-2022, while purely face-to-face was often used during the First Semester, SY 2022-2023.

Table 2. Learning modalities used in teaching and learning agriculture board courses during the COVID-19 pandemic

| INDICATORS | WEIGHTED MEAN | QUALITATIVE INTERPRETATION |
|---|---|---|
| 1. Second Semester - SY 2019-2020 | | |
| Purely Online | 3.34 | Used sometimes |
| Purely Face-to-Face | 2.77 | Used sometimes |
| Blended/ Combination | 1.98 | Rarely Used |
| 2. First Semester- SY 2020-2021 | | |
| Purely Online | 4.59 | Used all the time |
| Blended/ Combination | 1.69 | Rarely Used |
| Purely Face-to-Face | 1.61 | Rarely Used |
| 3. Second Semester - SY 2020-2021 | | |
| Purely Online | 4.67 | Used all the time |
| Blended/ Combination | 1.70 | Rarely Used |
| Purely Face-to-Face | 1.53 | Rarely Used |
| 4. First Semester - SY 2021-2022 | | |
| Purely Online | 4.56 | Used all the time |
| Blended/ Combination | 1.85 | Rarely Used |
| Purely Face-to-Face | 1.74 | Rarely Used |
| 5. Second semester - SY 2021-2022 | | |
| Purely Online | 3.69 | Used most of the time |
| Blended/ Combination | 2.40 | Rarely Used |
| Purely Face-to-Face | 2.18 | Rarely Used |
| 6. First semester - SY 2022-2023 | | |
| Purely Face-to-Face | 4.19 | Used most of the time |
| Blended/ Combination | 2.38 | Rarely Used |
| Purely Online | 1.96 | Rarely Used |

Legend:

| Range | Descriptive Rating | Qualitative Interpretation |
|---|---|---|
| 4.50-5.00 | Always Used | Used all the time |
| 3.50-4.49 | Often Used | Used most of the time |
| 2.50-3.49 | Sometimes Used | Used sometimes |
| 1.50-2.49 | Rarely Used | Rarely used |
| 1.00-1.49 | Never Used | Not used at all |

On the instructional materials used in teaching-learning agriculture board courses, in terms of availability of printed materials, syllabus was many times available (4.22), while books were occasionally available (3.08). On availability of digital media, audio/video presentation was many times available (4.09), while podcasts were hardly available (2.36). Power point, as one of the presentation media, was readily available at all times (4.51) while illustrative pictures were many times available as visual-aids (3.80). Meanwhile, accessibility of instructional materials was accessible most of the time (4.47). As to the frequency of use of IMs in teaching-learning agriculture board courses, all IMs were being utilized most of

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the time (4.28) due to their relevance and usefulness (4.37), availability (4.33) and learner preferences (4:31). In terms of quality of IMs, all IMs were rated as high quality (4.44). On the reasons on using IMs, majority (94%) cited, "IMs helped clarify concepts in agriculture by presenting essential information," among others. The students preferred handouts, audio/video presentation, power point and info graphics.

Table 3. Summary of the extent of use of IMs in teaching and learning agriculture board courses

| Instructional Materials (IMs) | OVERALL MEAN | QUALITATIVE DESCRIPTION |
|---|---|---|
| Quality of IMs | 4.44 | High Quality |
| Frequency of use | 4.29 | Often Used |
| Accessibility of IMs | 4.27 | Often Accessible |
| Availability of IMs | 3.43 | Occasionally Available |
| Grand Mean | 4.11 | Often Available/Accessible/Used/High Quality |

Legend:

| Scale | Range | Descriptive Rating | Qualitative Interpretation |
|---|---|---|---|
| 5 | 4.50-5.00 | Always | Always Available/Accessible/Used/Very High Quality |
| 4 | 3.50-4.49 | Often | Often Available/Accessible/Used/High Quality |
| 3 | 2.50-3.49 | Sometimes | Occasionally Available/Accessible/Used/Average in Quality |
| 2 | 1.50-2.49 | Rarely | Rarely Available/Accessible/Used/Poor in Quality |
| 1 | 1.00-1.49 | Never | Never Available/Accessible/Used/Very Poor in Quality |

Meanwhile, the academic performance of senior agriculture students in Mindanao SUCs was very high (10.58). SUC 1 students had the highest grand score (10.71) followed by SUC 2 (10.64) and SUC 3 (10.09) as shown in Table 4.

Table 4. Summary of the academic performance of senior agriculture students In Mindanao SUCs

| INDICATORS | General Weighted Average (GWA) Mean Score | Academic Classification Mean Score | Scholastic Status Mean Score | Total | QUALITATIVE DESCRIPTION |
|---|---|---|---|---|---|
| SUC 1 | 5.57 | 1.79 | 2.73 | 10.09 | Very High |
| SUC 2 | 5.64 | 2.00 | 3.00 | 10.64 | Very High |
| SUC 3 | 6.06 | 1.85 | 2.80 | 10.71 | Very High |
| GRAND SCORE | 5.77 | 1.88 | 2.84 | 10.58 | Very High |

Legend:
3-6 - Low 7-9 - Moderate 10-12- Very High

Meanwhile, the correlation analysis showed that the students' academic performance was positively correlated with socio-psychological attributes particularly mother's educational attainment ($r=0.100$; $p<0.042$), gross monthly income ($r=0.0108$; $p<0.028$), availability of instructional materials ($r=0.099$;

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p<0.0243), learning modality specifically face-to-face learning (r=-0.140; p<0.004), blended learning (r=-0.137; p<0.05), and online learning (r=-0.113; p<0.21).

Meanwhile, multiple linear regression analysis showed that academic performance of senior agriculture students in Mindanao SUCs was affected by purely face-to-face as a learning modality (β = 0.047), and availability of IMs particularly audio-video presentations (β = 0.043). The $R^2$ reflects 8% of variance was contributed by socio-psychological attributes, learning modalities and instructional materials.

Table 5. Correlation analysis between dependent and independent variables

| ATTRIBUTES | CORRELATION COEFFICIENT | PROBABILITY |
|---|---|---|
| Social Attributes | | |
| Household Size | -0.019 | 0.705$^{ns}$ |
| Parents' Educational Attainment | | |
| Father's Educational Attainment | 0.072 | 0.145$^{ns}$ |
| Mother's Educational Attainment | 0.100 | 0.042* |
| Parents' Occupation | | |
| Father's Occupation | 0.003 | 0.944$^{ns}$ |
| Mother's Occupation | -0.028 | 0.574$^{ns}$ |
| Gross Monthly Income | 0.108 | 0.028* |
| Psychological Attributes | | |
| Attitude towards studies during the pandemic | 0.051 | 0.297$^{ns}$ |
| Stress Coping Strategies | 0.050 | 0.311$^{ns}$ |
| Grit | -0.048 | 0.332$^{ns}$ |
| Instructional Materials | | |
| Availability | 0.099 | 0.043* |
| Accessibility | -0.092 | 0.062$^{ns}$ |
| Frequency of Use | -0.074 | 0.131$^{ns}$ |
| Quality | -0.022 | 0.661$^{ns}$ |
| Learning Modalities | | |
| Purely Face-to-Face | -0.140 | 0.004* |
| Purely Online | -0.137 | 0.005* |
| Blended | -0.113 | 0.021* |

Legend:
** - highly significant (Correlation is significant at 0.01 level, 2-tailed)
* - significant (Correlation is significant at 0.05 level, 2-tailed)
ns - not significant

## DISCUSSION

Based on the results, the following conclusions are hereby drawn:

Senior agriculture students, mostly from SUC 1, were regular and non-delinquent with high grades. They came from small farming families whose fathers were elementary level and farmers while their mothers were college level and government employees. They come from low income families but had favorable attitudes toward their studies during the COVID-19 pandemic with strong determination to finish their degree. Allen and Daly (2022) described the involved fathers as sensitive, warm, close, friendly, supportive, affectionate, nurturing, encouraging, comforting, and accepting. Henry et al. (2020) described positive father involvement as critical to the healthy social, emotional, and academic outcomes of children

at all stages of development. Additionally, the availability of financial support provided by the working mothers may increase their children's chances to attend higher education, which has an impact on their future employment and income (Azizah et al., 2022). Likewise, the finding also relates with the data of the Philippine Statistics Authority (PSA, 2023) stressing that the year-on-year change in the number of employed persons in June 2023 showed agriculture and forestry as the second top five sub-sectors. Likewise, the PSA (2023) also confirmed that from June 2023-October 2023, the country exhibited an employment rate of 96% showing agriculture sector as the potential source of income for Filipinos. It is therefore recommended that SUCs any offer scholarship or any form of assistance specially for agriculture students from low-income families. Likewise, Offices of Student Affairs of SUCs may strengthen its mentoring and counselling interventions through regular counselling sessions, tutorial and review classes. It will greatly help the students prepare for major examinations to improve their academic performance.

With health restrictions, online learning was sometimes used during the COVID-19 pandemic This helped keep the students safe and free from the virus. It suggests that the students possessed or have access to technology and gadget for online instruction. This finding conforms to Muhammad et al. (2021) findings that implementing an online teaching and learning approach will be a great way to ensure the continuity of teaching and learning activities. Therefore, SUCs may provide the much-needed licensed software, useful hardware and strong internet connection to support teaching-learning process to ensure conduct of online classes. Likewise, SUCs need to provide continuing professional development of the faculty members in integrating technology in the teaching-learning agriculture board courses.

The agriculture board courses were taught using syllabus, audio-video presentations and illustrative pictures. Powerpoint presentation was always used because of relevance and usefulness, availability and learner preferences and of high quality. Most students preferred handouts, audio/video presentation, power point and infographics.

Bukoye (2018) explains that instructional materials are used to create an effective plan to deliver the knowledge to a specific group of students. These IMs helped students engaged in various learning activities, aids them in knowledge retention, as well as the motivate them. (Etcuban et al., 2019). Bukoye (2028) explained that IMs stimulate students' interest, enrich students' experience, make learning meaningful, developmental imagery of the student, and develop the power of observation and generalization. It implies that IMs should catch and sustain the students' attention to the topics allowing them to explore and discover meaningful experiences and relevance of their courses in agriculture. It is recommended that the Director of Instruction of SUCs or any unit that takes charge in IMs production need to closely monitor, and evaluate the production of appropriate instructional materials to ensure quality and

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relevance. Student-users must evaluate the IMs regularly and create a pool of experts to further enhance the knowledge and skills of the faculty members especially the newly hired faculty on developing instructional materials. External evaluators from other higher education institutions may also be invited to evaluate the IMs. Experts in ICT in various SUCs may also venture on making different IMs available and accessible online for students anytime at a minimal cost.

The senior agriculture students in Mindanao SUCs showed high academic performance. They were regular students, non-delinquent and obtained high GWA with outstanding scholastic status. This means that the respondents achieved very good rating on their ten (10) agriculture board courses. Obtaining higher GWA suggests that the students were doing very well in their agriculture board courses. It also implies that they satisfied the standards of the University they are enrolled in. They attended class regularly, submitted class requirements and other performance tasks on time, and participate actively in class activities. The finding suggests that these students will likely remain and continue in the agriculture program and eventually finish the program with good grades. Obtaining higher GWA would mean more opportunities for scholarship, internships and job offerings (Ensoy & Lavega, 2015). Generally, senior agriculture students in Mindanao SUCs showed very high performance suggesting that they have mastered the skills and competencies that agriculture students should possess. It implies that these students have the intellectual ability to cope with the academic demands of the University where they study. Hence, CHED is encouraged to set guidelines in standardizing grading system for all tertiary schools specially SUCs. Technical Working Groups (TWGs) of CHED may also develop criteria in monitoring aspects of students' performance to sustain production of high quality graduates equipped with knowledge, skills and attitudes.

On relationship between the variables of the study, mother's educational attainment, gross monthly income, availability of IMs and learning modalities were significantly associated with academic performance of students. It implies that the mother's educational attainment plays a vital role in helping the children achieve better academic performance. Likewise, the higher the educational qualification of the mothers, the higher the possibility of its positive influence on their children. This is supported by Odoh et al. (2017) who opined that highly educated parents are more likely to show greater interest in their children's schoolwork progress and are always ready to provide for their children to succeed in school. Similarly, Seden et al. (2020) indicated that mother's education contributes to enhancing their children's academic achievement. It is also recommended that SUCs may strengthen its curricular programs to better prepare students for the Licensure Examination for Agriculturist (LEA). Instructional climate of SUCs may further be enriched by developing high quality IMs to produce highly skilled and competent graduates needed by the industry.

Face-to-face learning modality was found to be the greatest predictor of academic performance of senior agriculture students. It suggests that it remains to be the most effective teaching-learning modality as it allows active participation with immediate feedback between teachers and students. The results imply that the more the students are exposed to face-to-face learning, the more they become actively engaged with their teachers and fellow learners. According to Xhomara and Dasho (2023), online students in higher learning underperform compared with F2F students.

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