SORSOGON MULTIDISCIPLINARY RESEARCH JOURNAL
ISSUE 1 VOLUME 3

Towards the Making of Future Biologists in Sorsogon, the Philippines

Richard V. Dumilag[1,2]*, Teresa R. Haide Belgica[2], Cyrin Mae G. Burton[2], Franklin P. Calaminos[3], Geraldine F. De Jesus[1], Ritzelda A. Deri[1], Telesforo D. Escoto[1], Aaron D. Funa[2,4], Sherill A. Gilbas[1], Susan S. Janer[1], Mylene J. Lascano[4], Mabille R. Longavela[3], Mark Ariel D. Malto[5], Edna Marie L. Mijares[4] and Jhonner D. Ricafort[1]

[1]School of Graduate Studies, Sorsogon State University, Sorsogon City, Philippines

[2]College of Health and Science, Sorsogon State University, Sorsogon City, Philippines

[3]Education Department, Sorsogon State University, Magallanes, Philippines

[4]College of Teacher Education, Sorsogon State University, Sorsogon City, Philippines

[5]Fisheries Department, Sorsogon State University, Magallanes, Philippines

*Corresponding author: Richard V. Dumilag (richard.dumilag@sorsu.edu.ph)

Abstract

The need to offer a program specializing in biology in Sorsogon is writ large. The task of offering a program locally is thus one of feasibility assessment. Assuming that the intended results were desirable, a question is raised as to whether the proposed program was viable to offer at Sorsogon State University (SorSU). This study fell into two foci, namely, a program demand assessment among target grade leavers across sites in Sorsogon and a SWOT analysis of the program. The findings indicated a strong desire for a BS Biology program with various degrees of choice propensity across sites. Medical biology was the most preferred specialization among the respondents, indicating that the healthcare industry is the most perceived attractive field. The desired base institution was characteristic of strong track records and a high reputation, including the capacity to aid the enrollees financially. While SorSU personnel identified several strengths and opportunities impacting the offering of the program, a list of weaknesses and threats has to be shouldered. The primary cost to be confronted by SorSU was the facility and infrastructure, as the program particularly demands specialized laboratory compliance. While the university sets the framework for implementation, identifying risks impacting the program is a task requiring devolvement in management. This study provides insights into methods of empirical feasibility assessment for a BS Biology program. The methods presented may be applied or used to set a point of comparison for existing or queued programs. With this study, offering a BS Biology program would antecedently allow examining the potential and costs of the program, all germane towards the making of future professional biologists in Sorsogon.

Keywords: BS Biology, feasibility study, science program, STEM, SWOT analysis

Introduction

The province of Sorsogon embarks on launching a sustainable mechanism to respond to the inadequacy of programs in the life sciences (Table 1). The increasing demand for a workforce in the field of biology, the science of life, begs the exploration of offering a Bachelor of Science in BS Biology (BS Biology) program in the province. A BS Biology program is a four-year degree course aimed at providing students with a comprehensive understanding of life sciences in preparation for various careers or further education in related fields (Commission on Higher Education, 2017). Out of the nine state universities and colleges in the Bicol region, where Sorsogon is part of, only four are currently offering a BS Biology program (i.e. Bicol University, Catanduanes State University, Central Bicol State University of Agriculture, and Partido State University). None of these institutions are in Sorsogon.

Offering a BS Biology program in Sorsogon brings considerable benefits. Sorsogon is home to unique and diverse ecosystems of rich plants and animal assemblages (Brown et al., 2020; Docot et al., 2019; Dumilag et al., 2020; Kraft et al., 1999). By offering BS Biology program, local students and researchers would have the wider opportunity to work professionally towards ecosystem conservation, including community engagements encompassing them. Providing a BS Biology program locally can reduce students' financial burdens particularly those who cannot afford to study further afield (i.e. the nearest school offering the program is some 55 km away from Sorsogon City). Offering a BS Biology program in the province could also help to keep local talent. Students who may have otherwise moved elsewhere for their education may choose to stay in Sorsogon; hence, they will most likely contribute to sustaining the need to supply the local workforce and support development. Lastly, the presence of an educational institution offering a biology program may encourage research partnerships with local industries and organizations.

Established in 1907, the Sorsogon State University (SorSU) is a premier academic institution in the province of Sorsogon. Committed to providing quality education and producing graduates who are competent in their respective fields, SorSU is a potential base to generate future biologists. There are currently 35 programs offered at SorSU, distributed among its four campuses (Sorsogon City, Bulan, Magallanes, and Castilla Campuses). Hitherto, there are only three programs offered at the university that are related to life sciences: BS Midwifery, BS Fisheries, and BS Agriculture with a major in Crop Science or Animal Science. Pursuant to the SorSU's Strategic Plan 2022–2026, BS Biology is one of the proposed programs targeted to be offered within this timetable.

A feasibility study allows the identification of those presumed conditions that must be met for a proposal to be accepted (McLeod, 2021). While feasibility studies have become common practice in making an informed decision on whether to establish a program, finding previous studies highlighting the offering of a BS Biology program is limited (Cortes et al., 2023; García, 2013), often most likely ostensibly exists as gray literature. In Philippine higher education, surveys that focus on the student's interest in enrolling and analysis using strengths, weaknesses, opportunities, and threats (SWOT analysis) are widely used for a feasibility study of program offerings. Considering the limited extant research that evaluates an offering of a BS Biology program, at least in the Philippine literature, this study, therefore, aimed to assess the viability of offering the program in the province of Sorsogon.

Methodology

A survey (Supplementary Table 1) form using closed-ended questions was designed to assess the demand for the BS Biology program at SorSU. Content validity of the questions was assessed by a panel of experts from science education with at least 10 years of experience in teaching and research. Reliability of questions was conducted with 28 students under the Grade 11 Science, Technology, Engineering, and

Mathematics (STEM) strand. This cohort of grade school graduates represents potential enrollees in the program (to be implemented in 2024).

The computed Cronbach's alpha coefficient was 0.78. With permits secured from the school districts to administer the survey, 14 major public secondary schools (Supplementary Table Table 2) in the entirety of Sorsogon participated in the survey. A total of 426 Grade 11 STEM students were asked if they were interested in possibly enrolling in the program if it were offered at SorSU.

A two-step SWOT analysis was done to assess factors that may impact the feasibility of offering a BS Biology program at SorSU. Using the round-robin method, 13 faculty members and two graduate students (from BS Biology and BS Fisheries programs) were invited for a discussion. Four groups were formed. Each group took turns sharing thoughts to identify the strengths, weaknesses, opportunities, and treats of the BS Biology program at SorSU. The identified SWOTs were outlined and interpreted. By compiling the key findings, a survey form was developed (Table 4). The survey was deployed via a Google form. Thirty faculty members from SorSU initially responded to validate the reliability of the questions. The responses scored a Cronbach's alpha value of 0.98. From a larger group of 85 participants from SorSU (faculty members), a broader perspective on the identified SWOTs was explored. Responses were entered into Microsoft Excel version 10.60 and analyzed with Wizard Pro data analysis version 1.9.49 (Evan Miller, Chicago, IL, USA) to generate descriptive statistics. To determine whether there are significant differences among the mean scores of Likert scale responses for identified sections based on SWOT analysis, a one-way ANOVA was used at 5% level of significance and tested with post-hoc Tukey HSD via the Astatsa platform (astatsa.com).

A survey (Supplementary Table 1) form using closed-ended questions was designed to assess the demand for the BS Biology program at SorSU. Content validity of the questions was assessed by a panel of experts from science education with at least 10 years of experience in teaching and research. Reliability of questions was conducted with 28 students under the Grade 11 Science, Technology, Engineering, and Mathematics (STEM) strand. This cohort of grade school graduates represents potential enrollees in the program (to be implemented in 2024).

The computed Cronbach's alpha coefficient was 0.78. With permits secured from the school districts to administer the survey, 14 major public secondary schools (Supplementary Table Table 2) in the entirety of Sorsogon participated in the survey. A total of 426 Grade 11 STEM students were asked if they were interested in possibly enrolling in the program if it were offered at SorSU.

A two-step SWOT analysis was done to assess factors that may impact the feasibility of offering a BS Biology program at SorSU. Using the round-robin method, 13 faculty members and two graduate students (from BS Biology and BS Fisheries programs) were invited for a discussion. Four groups were formed. Each group took turns sharing thoughts to identify the strengths, weaknesses, opportunities, and treats of the BS Biology program at SorSU. The identified SWOTs were outlined and interpreted. By compiling the key findings, a survey form was developed (Table 4). The survey was deployed via a Google form. Thirty faculty members from SorSU initially responded to validate the reliability of the questions. The responses scored a Cronbach's alpha value of 0.98. From a larger group of 85 participants from SorSU (faculty members), a broader perspective on the identified SWOTs was explored. Responses were entered into Microsoft Excel version 10.60 and analyzed with Wizard Pro data analysis version 1.9.49 (Evan Miller, Chicago, IL, USA) to generate descriptive statistics. To determine whether there are significant differences among the mean scores of Likert scale responses for identified sections based on SWOT analysis, a one-way ANOVA was used at 5% level of significance and tested with post-hoc Tukey HSD via the Astatsa platform (astatsa.com).

Table 1

Summary information of tertiary education institutions in Sorsogon

No.	Present name	Type of Institution	Year established	Location	No. of program offerings	No. of life science related programs
1	ACLC College of Sorsogon	Private HEI	1986	Sorsogon City	8	0
2	Aemilianum College	Private HEI	1985	Sorsogon City	13	0
3	Annunciation College of Bacon Sorsogon Unit	Private HEI	1967	Sorsogon City	9	0
4	Bicol Merchant Marine College	Private HEI	1993	Sorsogon City	4	0
5	Bicol University Gubat Campus	SUC Satellite	1996	Gubat	5	0
6	Computer Communication Development Institute-Sorsogon	Private HEI	1996	Sorsogon City	4	0
1	Donsol Community College	LUC	2015	Donsol	1	0
2	Estenias Science Foundation School	Private HEI	1979	Casiguran	3	2[a,b]
3	Our Lady of Peñafrancia Seminary	Private HEI	1945	Sorsogon City	1	0
4	Pilar Community College	LUC	2019	Pilar	2	0
5	R.G. de Castro Colleges	Private HEI	1950	Bulan	4	0
6	Solis Institute of Technology	Private HEI	1992	Bulan	4	0
7	Sorsogon College of Criminology	Private HEI	1998	Sorsogon City	1	0
8	Sorsogon State University-Bulan Campus	SUC Satellite	1993	Bulan	8	0
9	Sorsogon State University-Castilla Campus	SUC Satellite	1993	Castilla	3	1[c]
10	Sorsogon State University-Magallanes Campus	SUC Satellite	1993	Magallanes	5	1[d]
11	Sorsogon State University-Main	SUC Main	1907	Sorsogon City	26	2 [a,b]
12	Southern Luzon Institute	Private HEI	1924	Bulan	2	0
13	Southern Luzon Technological College Foundation-Pilar	Private HEI	1990	Pilar	2	0
14	Speed Computer College	Private HEI	1991	Sorsogon City	3	2 [a,b]
15	St. Louise De Marillac College of Sorsogon	Private HEI	1937	Sorsogon City	7	0
16	The Lewis College	Private HEI	1999	Sorsogon City	4	0
17	Veritas College of Irosin	Private HEI	1985	Irosin	6	0

Results and Discussion

The number of students who expressed their desire to enroll in the program was 161 (35.6% of the total participants). Most of the interested respondents were female (109 students). In terms of frequency (Figure 1), the largest potential enrollees came from Gubat (30 students) and Sorsogon City (27 students). Those students from Juban had the highest relative frequency of interested potential enrollees in the program (81.3%), followed by those from Gubat (51.7%) and Irosin (47.6%).

Figure 1

Heat map of the relative frequency of Grade 11 STEM students in Sorsogon expressing interest in enrolling in the BS Biology program if it were offered at SorSU. There are no respondents in the municipality of Barcelona (white area) because a STEM program is not currently offered there. Inset map of Sorsogon: 1: Donsol, 2: Pilar, 3: Castilla, 4: Sorsogon City, 5: Prieto Diaz, 6: Gubat, 7: Castilla, 8: Bulusan, 9: Juban, 10: Irosin, 11: Sta. Magdalena, 12: Magallanes, 13: Bulan, 14: Matnog.

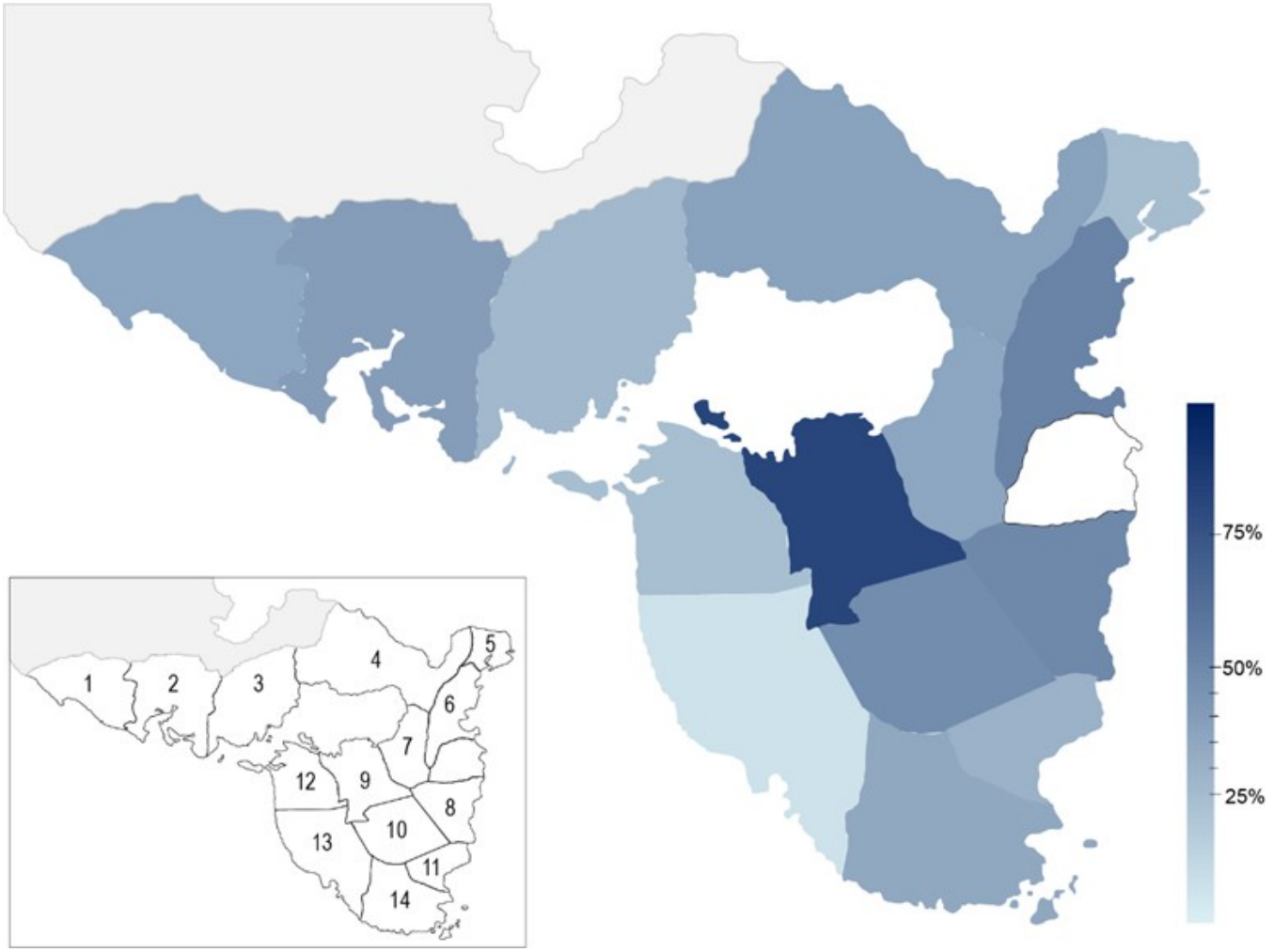
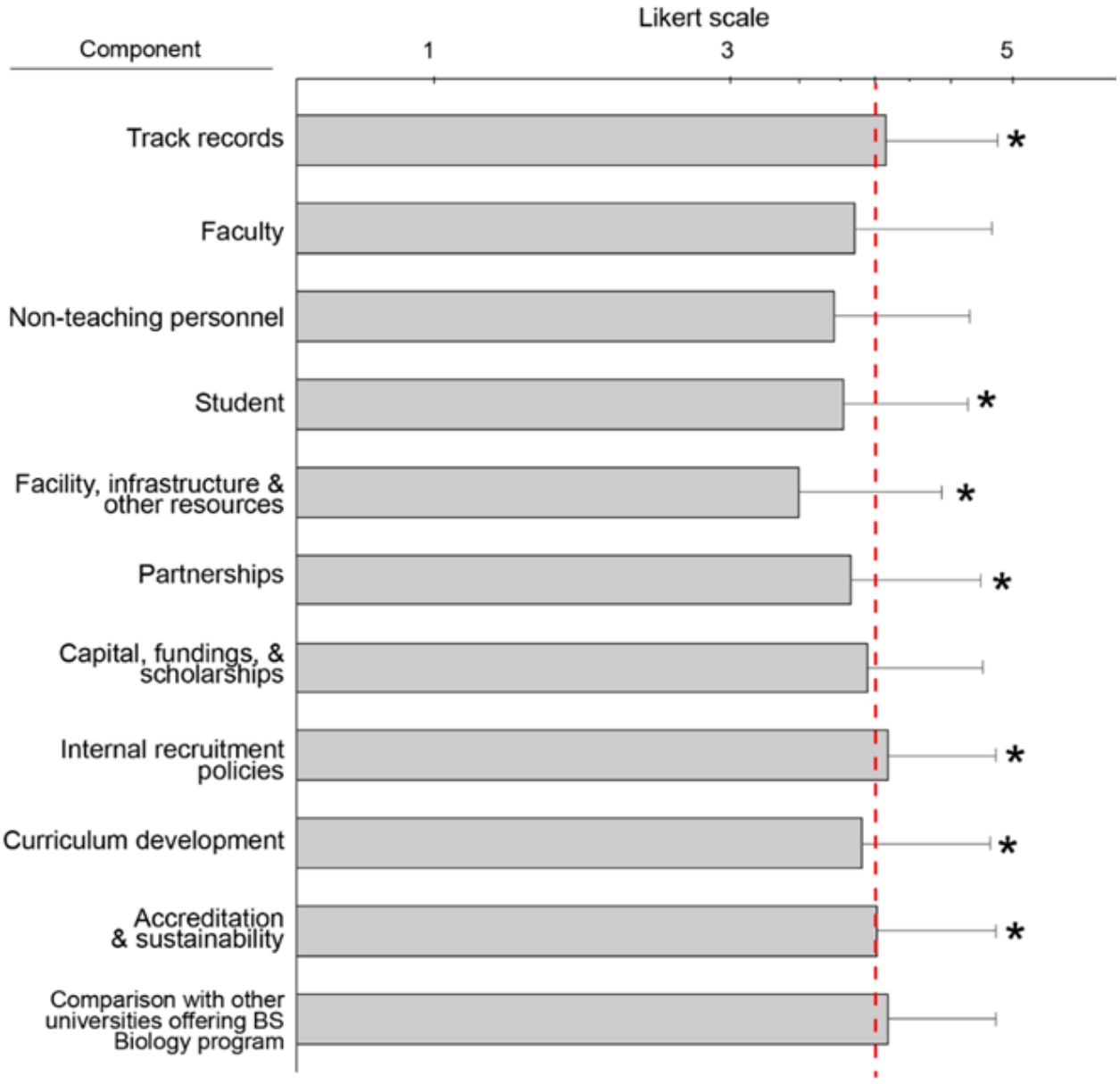


Figure 2

Mean scores of Likert scale responses for identified sections based on SWOT analysis on the feasibility of offering a BS Biology program at SorSU. The mean value expressing bias skewed from the dashed line (optimum likeliness) i.e. towards a lower Likert score, pales in comparison to the respective potential strengths or opportunities identified within that specific component. An error bar indicates the standard deviation while an asterisk represents a significant difference within the mean responses per component.



The specialization of medical biology (78.26%) received the highest preference among the respondents, while biotechnology (31.68%) and microbiology (26.09%) emerged as the next favored specializations. In consonance, the majority of the respondents (94.91%) expressed the healthcare industry as a potential employment field, followed by professions from biotechnology firms (58.39%) and research institutions (49.69%). The rich biodiversity (63.35%) and the pressing environmental issues (62.11%) highlighted the offering of the BS Biology program in Sorsogon as major advantages.

The prospected enrollees identified several factors associated with the importance of the availability of a BS Biology program in Sorsogon. These included the 'quality of education' (64.60%), 'affordability of tuition fees' (63.98%), and 'availability of financial aid including scholarships' (51.80%). Even though more than half of the prospective enrollees (i.e. 64.60%) considered the availability of the BS Biology program to be "very important" in their university selection process, the reputation of the based institution (27.95%) was found to be of lesser importance. The majority of the respondents (92.55%) identified laboratory facilities as the most critical resource for a BS Biology program, followed by library resources (60.25%) and quality of faculty recruitment (45.96%). A total of 55.90% respondents acknowledged that the program can produce graduates that may address the shortage of professionals and provide job opportunities (44.09%) for the field of life sciences.

The consensus of possible internal (strengths or weaknesses) and external (opportunities or threats) factors that go into offering a BS Biology program at SorSU resulted in 35 questions categorized into 11 sections (Table 2). SorSU held strong reputation and the inherent geographic proximity to potential students highlighted some of the identified strengths. The key weaknesses were challenges in resource and faculty availability. Presumed opportunities involved potential employment for graduates of the BS Biology program in various biological fields and the positive impact of the workforce on the local community. The primary threat identified was competition from other schools offering established BS Biology programs with equally strong track records compared to SorSU's.

The highest mean component believed to be 'more likely' (Likert scale of 4.00) in terms of strengths and opportunity included 'track records' (4.09 ± 0.78), 'internal recruitment policy' (4.10 ± 0.73), 'accreditation and sustainability' (4.03 ± 0.81) and 'comparison with other universities offering BS Biology program' (4.11 ± 0.75). The relatively least likely components were the 'facility, infrastructure, and other resources' (3.48 ± 0.99) and 'non-teaching personnel' (3.73 ± 0.95). Figure 2 shows the summary of mean Likert scale scores for each component, including significant differences within components. Significant differences were indicated within the mean responses in various components. These components were biased towards likely positive saved from the 'student', 'facility, infrastructure and other resources', 'partnership', and 'curriculum development' (see thresholds). Significant differences were observed in the mean responses across these various components, indicative of the complex perceptions of the respondents. For instance, SorSU may be perceived as having varied resources and infrastructure, as some programs pride themselves for their well-established facilities and bore strong track record, while others may require improvement. Differing levels of accreditation can also influence respondents' perceptions of SorSU's appeal, operational capacity, and student enrollment.

The majority of the students' expressed interest in medical biology and a high appreciation of "biodiversity" as a key value for offering programs at SorSU has an apparent connection. The emphasis on biodiversity is reflective of a broader recognition of its importance in medical biology especially in traditional medicine and biodiscovery (Clark et al., 2014).

From the point of view of SorSU's personnel, the university seems to be at risks of underdeveloped resources. This was also illuminated in a report conducted by Medalla et al. (2021) for the possible offering of BS Entertainment and Multimedia Computing in SorSU –Bulan Campus. Despite having a high potential

enrollee and SorSU's identified strengths and potential opportunities, the university needs to address challenges in improving infrastructure, particularly laboratory facilities. Budget allocation for facility and infrastructure upgrades is desired. Here, the university managers have a greater role in mitigating some tensions brought about by limited fundings. Accordingly, substantial resources for the successful launch of the program inherently include the recruitment of qualified and competent faculty members (Langenberg & Spicer, 2001). The risk associated with potential difficulties in recruiting new members can be mitigated with strong strategic planning (Bush et al., 2006; Hutchison, 2012).

Conclusion and Recommendation

This study has determined that it is feasible for SorSU to offer a BS Biology program. The surveyed population comprising the Grade 11 STEM students from Sorsogon will likely choose a BS Biology program if the base university offers high-quality education along with the availability of financial aid. These results mirror a number of studies undertaken elsewhere in the Philippines (Aguado et al., 2015; Dagang & de Mesa, 2017). SorSU has reputable programs (i.e. mostly have undergone accreditation) and admitting students entitled to free tuition and a wide selection of financial aid. The student preference for program choice therefore matches what SorSU may offer.

As of July 2023, the number of students admitted to SorSU stood at 14,488. Although there has been a significant increase in undergraduate enrollments in the past six years (mean increase of 24.32%), students enrolled in life science-related programs took only a small part of this growth (3.58% to 15.15%). In part, this is due to the low number of programs offered in this field. Universities that offer biology and other life-sciences programs often collaborate with various public health institutions, government/non-profit institutions focused on environmental conservation or biodiversity resource management, as well as contribute to scientific research breakthroughs (Fung & Tan, 2021; Siegel et al., 2003). It would be interesting to see how the trends for the program's choice among the grade school leavers from STEM strands in SorSU have changed when additional life science-related programs are offered, i.e. to include BS Nursing and BS Food Technology programs that will also be offered soon.

While relatively little has been published research into the feasibility studies in the offering a BS Biology program, particularly in the Philippines (García, 2013), various methods are available for program viability measurements. It is hope that the methodology presented holds on future studies with common goals of examining the viability of a proposed programs especially those that cut across the life sciences. The present study used a student demand-based survey and SWOT analysis to which several insights can be deduced, especially for regulatory compliance, projectivization, and capital fundraising campaigns (Smith et al., 2017).

This study has limitations dependent on the time it was conducted. The strengths, weaknesses, opportunities, and threats of the BS Biology program when implemented at SorSU can significantly change as faculty form, curriculum is revised, or infrastructure is upgraded. Lacking at the moment is a clear expression of local and extra-local employment prospects and stakeholder engagements. As a strong sense of need and viability were evinced in this study, the making of the future professional biologists becomes a feasible option in Sorsogon.

References

Aguado, C. L., Laguador, J. M., & Deligero, J. C. L. (2015). Factors affecting the choice of school and students' level of interest towards the maritime program. *Asian Social Science*, *11*(21), 231–239. https://doi.org/10.5539/ass.v11n21p231

Brown, R. M., Meneses, C. G., Wood, P. L., Jr., Fernandez, J. B., Cuesta, M. A., Clores, M. A., Tracy, C., Buehler, M. D., & Siler, C. D. (2020). Unexpected discovery of another new species of Philippine False Gecko (Gekkonidae; *Pseudogekko*) from the Bicol Peninsula of Luzon Island. *Herpetologica*, *76*(3), 315-329. https://doi.org/10.1655/Herpetologica-D-19-00029.1

Bush, S. D., Pelaez, N. J., Rudd, J. A., Stevens, M. T., Williams, K. S., Allen, D. E., & Tanner, K. D. (2006). On hiring science faculty with education specialties for your science (not education) department. *CBE—Life Sciences Education*, *5*(4), 297–305. https://doi.org/10.1187/cbe.06-09-0189

Clark, N. E., Lovell, R., Wheeler, B. W., Higgins, S. L., Depledge, M. H., & Norris, K. (2014). Biodiversity, cultural pathways, and human health: a framework. *Trends in Ecology & Evolution*, *29*(4), 198-204. https://doi.org/10.1016/j.tree.2014.01.009

Commission on Higher Education. (2017). CMO No. 49, s. 2017: Policies and Standards for Bachelor of Science in Biology (BS Biology) Program. Commission on Higher Education, Republic of the Philippines.

Cortes, S., Agero, A., Agravante, E. M., Arado, J., Arbilon, C. A., Lampawog, E., Letrondo, A. F., Lorca, A., Monsanto, A., Pineda, H., Ramas, C., Rosales, R., Sadili, C., Sayson, J., & Tubog, R. (2023). Factors influencing students' intention to enroll in Bachelor of Science in Biology: A structural equation modelling approach. *Cogent Education*, *10*(2), 2273635. https://doi.org/10.1080/2331186X.2023.2273635

Dagang, A. L. B., & de Mesa, C. D. (2017). Factors influencing choice of a business school in a city of southern Philippines. *Research Journal of Social Sciences*, *10*(2), 1–7.

Docot, R. V. A., Gutierrez, K., Mamalias, R. E. E., Espino, N., Java, A. A. B., Dineros, C. D., & Mijares, E. M. L. (2019). Two new Zingiber species (Zingiberaceae) from Sorsogon, Philippines. *The Gardens' Bulletin, Singapore*, *71*, 459-475.

Dumilag, R. V., Dumago, F. S., Cabudoy, R. K. R., Peralta, M. C. E., Li, C. C., Gamus, G. C. V., Romero, R. G. T., Yap, S. L., Roleda, M. Y., Geraldino, P. J. L., Verbruggen, H., Leliaert, F., Draisma, S. G. A., Liao, L. M., & Kraft, G. T. (2020). The Ulvophyceae (Chlorophyta) of eastern Sorsogon, Philippines, including *Halimeda magnicuneata* sp. nov. (Bryopsidales). *Botanica Marina*, *63*(5), 439–453. https://doi.org/doi:10.1515/bot-2020-0017

Fung, H.-N., & Tan, C. (2021). Networking universities and hospitals: A case study of research and commercialization in the Taiwanese herbal medicine sector. *East Asian Science, Technology and Society: An International Journal 15*(4), 467–481. https://doi.org/10.1080/18752160.2021.1926618

García, Y. V. (2013). When preparation meets opportunity: a case study exploring the feasibility of pursuing a career in biology for two Latina high school girls. *Cultural Studies of Science Education*, *8* (4), 935-951. https://doi.org/10.1007/s11422-013-9519-2

Hutchison, L. F. (2012). Addressing the STEM teacher shortage in American schools: ways to recruit and retain effective STEM teachers. *Action in Teacher Education*, *34*(5-6), 541–550. https://doi.org/10.1080/01626620.2012.729483

Kraft, G. T., Liao, L. M., Millar, A. J. K., Coppejans, E. G. G., Hommersand, M. H., & Freshwater, D. W. (1999). Marine benthic red algae (Rhodophyta) from Bulusan, Sorsogon Province, Southern Luzon, Philippines. *Philippine Scientist*, *36*, 1–50.

Langenberg, D. N., & Spicer, D. Z. (2001). The modern campus. *New Directions for Higher Education*, *2001*(115), 3–15. https://doi.org/https://doi.org/10.1002/he.22

McLeod, S. (2021). Feasibility studies for novel and complex projects: Principles synthesised through an integrative review. *Project Leadership and Society*, *2*, 100022. https://doi.org/https://doi.org/10.1016/j.plas.2021.100022

Medalla, J. V. B., Dipad, M. A. D., & Bongalosa, C. G. (2021). The offering Bachelor of Science in Entertainment and Multimedia Computing in Sorsogon State University – Bulan campus: A feasibility study. *European Journal of Humanities and Educational Advancements*, *2*(11), 76–83.

Siegel, D. S., Waldman, D. A., Atwater, L. E., & Link, A. N. (2003). Commercial knowledge transfers from universities to firms: improving the effectiveness of university–industry collaboration. *The Journal of High Technology Management Research*, *14*(1), 111–133. https://doi.org/https://doi.org/10.1016/S1047-8310(03)00007-5

Smith, E. A., Miller, M. T., & Gearhart, G. D. (2017). Using feasibility studies in capital fundraising campaigns: A national survey of community colleges. *Journal of Applied Research in the Community College*, *24*(2), 15–27.

Supplementary Table 1. The contents of the survey form designed to assess the demand for the BS Biology program at the Sorsogon State University. *Component: **1:** Demographic variable, **2:** Interest in BS Biology program, **3:** Feasibility factors.*

No	Question (options)	Component
1	Age	1
2	Sex (*Male, Female*)	1
3	Municipality/ City (*Bulan, Bulusan, Casiguran, Castilla, Donsol, Gubat, Irosin, Juban, Magallanes, Matnog, Pilar, Prieto Diaz, Santa, Magdalena, Sorsogon City*)	1
4	School Name (see Table 2)	1
5	Are you interested in pursuing a BS Biology program at Sorsogon State University? (*Yes, No, Unsure*)	2
6	If the BS Biology program were available at Sorsogon State University, which area of specialization would you be most interested in? Please choose up to three (3) answers. (*Medical Biology, Cellular and Molecular Biology, Microbiology, Plant Biology, Systematic Biology, Developmental Biology, Ecology, Biotechnol-*	2
7	How important is the availability of a BS Biology program in your choice of a university? (*Very important, Important, Somewhat important, Not important)*	2
8	How likely would you be to enroll in a BS Biology program at Sorsogon State University if it were offered? (*Very likely, Likely, Somewhat likely, Not likely*)	3
9	What factors would influence your decision to enroll in a BS Biology program at Sorsogon State University? Please choose all that apply. (*Affordability of tuition fees, Quality of education, Proximity to home, Availability of scholarships or financial aid, Reputation of the university, Availability of research opportunities*)	3
10	In your opinion, what resources or facilities should Sorsogon State University prioritize in order to successfully offer a BS Biology program?. Please choose up to three (3) answers. (*Well-equipped laboratories, Access to research materials, Modern classrooms and teaching facilities, Collaboration opportunities with research institutions or other stakeholders, Qualified and experienced faculty members, On-campus housing for students*)	3
11	In your opinion, what are the possible employment opportunities for graduates of BS Biology program in Sorsogon? Please choose up to three (3) answers. (*Medical and healthcare fields, Biotech companies, Environmental agencies, Research and development firms, Academic institutions*)	3
12	How do you think the offering of BS Biology program in Sorsogon State University can impact the community? (*Provide employment opportunities for the locals, Address the shortage of professionals in the field of biology in the province, Promote environmental awareness and conservation efforts, Contribute to the local economy*)	3
13	What are the advantages of Sorsogon as a province to offer BS Biology program? Please select all that apply. (*Rich biodiversity, Access to marine and terrestrial resources for research, Presence of environmental issues that need to be addressed, Availability of research facilities and equipment, Strong support from the local government*)	3

Supplementary Table 3. Summary of information provided by respondents in this study.

No.	School Name	Site	Number of respondents	Male	Female
1	Donsol National Comprehensive High School	Donsol	36	26	46
2	Pilar National Comprehensive High School	Pilar	20	18	40
3	Castilla National High School	Castilla	22	11	25
4	Sorsogon National High School	Sorsogon City	72	7	27
5	Prieto Diaz National High School	Prieto Diaz	8	17	16
6	Gubat National High School	Gubat	58	19	9
7	Casiguran Technical Vocation School	Casiguran	33	4	23
8	Bulusan National High School	Bulusan	24	11	14
9	Juban National High School	Juban	16	9	15
10	Gallanosa National High School	Irosin	21	12	10
11	Sta. Magdalena National High School	Sta. Magdalena	27	10	11
12	Magallanes National High School	Magallanes	25	9	11
13	Bulan National High School	Bulan	28	7	9
14	Matnog National High School	Matnog	34	2	6
		All sites	424	162	262

Supplementary Table 4. The contents of the survey form designed to assess the common internal strengths and weaknesses of Sorsogon State University, as well as their external opportunities and threats in offering the BS Biology program.

No.	Question (options)	Component
1	Age	1
2	Sex (Male, Female)	1
3	Years of service in SorSU	1
4	Role (administrator [exclusive], faculty member [exclusive], both)	1
5	If you would likely suit being included in the roster of BS Biology faculty members, please choose the curriculum component you would likely teach in the program? (Biology Fundamental and Specialization Courses, Biology Tool Courses [Chemical Biology, BioPhysics, Statistical Biology], General Education Courses [including PE and NSTP])	1
6	SorSU has a solid track record of successful program implementation to offering new programs*	2.1
7	SorSU has a strong reputation in the field of science courses related to BS Biology program.*	2.1
8	SorSU has a strong reputation to local employment markets to meet the demand for graduates from a BS Biology program. *	2.1
9	SorSU faculty members are qualified and capable of teaching BS Biology courses.*	2.2
10	SorSU has an adequate number of and corresponding position for the required faculty members to teach in BS Biology courses. *	2.2
11	SorSU's location and infrastructure are optimal for attracting and retaining quality faculty (and students) for a BS Biology program. *	2.2
12	SorSU non-teaching personnel is capable of handling the additional workload of a new BS Biology program. *	2.3
13	SorSU's has a clear strategic plan to open additional tenureship (plantilla) especially for laboratory technicians. *	2.3
14	SorSU's non-teaching personnel is capable in assisting students in accessing resources and facilities necessary for their academic success in the BS Biology program.*	2.3
15	SorSU is likely to attract sustained number of student enrollees for the BS Biology program.*	2.4
16	SorSU is likely to attract international students.*	2.4
17	SorSU has a robust student support system that would adequately satisfy the needs of new BS Biology students.*	2.4
18	SorSU has adequate laboratory facilities to support laboratory-based courses in BS Biology program.*	2.5
19	SorSU location and infrastructure are conducive to attracting and retaining quality faculty and students for a BS Biology program.*	2.5
20	SorSU's library resources are extensive enough to support a new BS Biology program.*	2.5
21	SorSU has a wide network partnerships that could offer quality internship and research opportunities for BS Biology students.*	2.6
22	SorSU has strong links with the local community, which could offer opportunities for applied learning in the BS Biology program.*	2.6
23	SorSU has a strong alumni network in the field of biology, which could provide mentorship and career opportunities for BS Biology students.*	2.6
24	SorSU has sufficient financial resources to establish and maintain a BS Biology program.*	2.7
25	SorSU has opportunities for securing external funding and grants when offering the BS Biology program.*	2.7
26	SorSU has strong support from various scholarship-giving bodies for qualified students admitted in the BS Biology program.*	2.7
27	SorSU has clear policies on recruiting qualified and/or competent, faculty for the BS Biology program.*	2.8
28	SorSU has a clear plan for enhancing its admission policy relative to student applicants to the offering of the BS Biology program.*	2.8
29	SorSU's free higher education system will bring positive impacts to the offering of a BS Biology program.*	2.8
30	SorSU has progressive approach to curriculum development and its delivery.*	2.9
31	SorSU has a clear plan to soon pursue offering other BS programs aligned to BS Biology (allied fields).*	2.9
32	SorSU has a potential to soon pursue offering graduate studies (MS Biology) and Doctor of Medicine.*	2.9
33	SorSU's offering of BS Biology program aligns with the overall mission and vision of the University.*	2.10
34	SorSU is well-prepared to meet the soon-accreditation requirements for a BS Biology program.*	2.10

35	SorSU has a clear plan for improving the facility and infrastructure for the BS Biology program in the future.*	2.10
36	SorSU has a flexible and adaptable administrative structure to respond to changing educational trends compared to other nearby universities in Bicol region.*	2.11
37	SorSU has a more favorable location and access to natural resources for field research compared to other nearby universities in Bicol region.*	2.11
38	SorSU has a better opportunity to capitalize its unique geographical location and biodiversity resources for biology-related researches compared to other nearby universities in Bicol region.*	2.11
39	SorSU has a higher potential for establishing research centers and institutes in specialized areas compared to other nearby universities in Bicol region.*	2.11
40	SorSU has a better opportunity to meet the specific needs and demands of the local industry and job market compared to other nearby universities in Bicol region.*	2.11

*options were 5: most likely, 4: more likely, 3: likely, 2: less likely, 1: least likely

1: Demographic variable

2.1: Track records

2.2: Faculty

2.3: Non-teaching personnel

2.4: Student

2.5: Facility, infrastructure, and other resources;

2.6: Partnerships

2.7: Capital, fundings, and scholarships

2.8: Internal recruitment policies

2.9: Curriculum development

2.10: Accreditation and sustainability

2.11: Comparison with other universities offering BS Biology program