



The Use of Information Service Modules to Enhance Students' Assertive Behavior

Reynalyn Tayaban^{1*}, Bai Raezza I. Guizo²

Correspondence regarding this article should be addressed to:

* Reynalyn Tayaban, Irisan National High School, Baguio City, Philippines,
✉ reyntayaban@gmail.com

This article is available online at <https://ojs.aeducia.org/index.php/ijcp/issue/view/3>

How to Cite this Article:

Tayaban, R., & Guizo, B. R. I. (2025). The Use of Information Service Modules to Enhance Students' Assertive Behavior. *International Journal of Counseling and Psychotherapy*, 2(1), 19-25. <https://doi.org/10.64420/ijcp.v2i1.184>

SCROLL DOWN TO READ THIS ARTICLE



Academia Edu Cendekia Indonesia (AEDUCIA), as the publisher, makes every effort to ensure the accuracy of all information (the "Content") contained in its publications. However, we make no representations or warranties regarding the accuracy, completeness, or suitability of the Content for any purpose. Any opinions and views expressed in this publication are solely those of the authors and do not reflect or are endorsed by AEDUCIA. The accuracy of the Content should not be relied upon without independent verification using primary sources. AEDUCIA shall not be liable for any losses, actions, claims, proceedings, demands, costs, expenses, damages, or other liabilities, whether direct or indirect, arising from the use of the Content.

International Journal of Counseling and Psychotherapy (IJCP) is published by Academia Edu Cendekia Indonesia (AEDUCIA) and complies with the [Principles of Transparency and Best Practice in Scholarly Publishing](#) at all stages of the publication process. IJCP may include links to external websites operated by third parties. These links are provided solely for the dissemination of scholarly knowledge in the fields of counseling and psychotherapy. AEDUCIA does not assume responsibility for the content or accuracy of information on external websites.

Article Information

Copyright holder:

© Tayaban, R., & Guizo, B. R. I. (2025)

First Publication Right:

International Journal of Counseling and Psychotherapy

Article info:

DOI: <https://doi.org/10.64420/ijcp.v2i1.184>

Word Count: 4578

Publisher's Note:

The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of AEDUCIA and/or the editor(s). AEDUCIA and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.

This Article is licensed under the: [CC BY-SA 4.0](#)

Publication details, including instructions for authors and subscription information, are available at:

<https://ojs.aeducia.org/index.php/ijcp/about>





Contents lists available at ojs.aeducia.org

International Journal of Counseling and Psychotherapy

Volume 2, Issue 1 (2025), 10.64420/ijcp.v2i1

Journal homepage: <https://ojs.aeducia.org/index.php/ijcp>

IJCP

E-ISSN 3064-3465
P-ISSN 3064-271X

Research Article

Read Online:  <https://doi.org/10.64420/ijcp.v2i1.184>

Open Access

The Use of Information Service Modules to Enhance Students' Assertive Behavior

Reynalyn Tayaban*¹, Bai Raezza I. Guizo²

¹ Irisan National High School, Baguio City, Philippines

² Lourdes National High School, Bohol, Philippines

ARTICLE HISTORY

Received: February 28, 2025

Revised: March 24, 2025

Accepted: April 19, 2025

Published: April 29, 2025

KEYWORDS

Module;
Information services;
Assertive behavior;
Students

ABSTRACT

Background: Assertive behavior plays a key role in a student's ability to interact with peers and instructors, express opinions, and stand up for themselves in various situations. **Objective:** Assertive behavior is a crucial social skill that students must develop to navigate interpersonal relationships and academic challenges effectively. However, fostering assertiveness among students can be difficult due to various personal and environmental factors. This study aims to measure the improvement in students' assertive behavior through the use of information service modules. **Method:** The research adopts a Research and Development (R&D) approach and was conducted throughout 2023 with a sample of 30 students. Data were collected through questionnaires designed to assess levels of assertive behavior before and after the intervention. The analysis involved conducting (1) normality tests to ensure data distribution assumptions were met, and (2) dependent sample t-tests to determine the significance of changes. **Result:** The findings indicate a significant improvement in students' assertive behavior, demonstrating the effectiveness of the developed module-based information service. **Conclusion:** The study confirms that the module-based information service effectively enhances students' assertive behavior and addresses the research problem. **Contribution:** This research provides theoretical insights and contributes to the development of module-based information service media as an effective tool for fostering students' assertive behavior.

1. INTRODUCTION

Assertive behavior is an interpersonal behavior that involves aspects of honesty and openness of thoughts and feelings. Assertive people are able to exchange experiences, thoughts and feelings with others (Paterson, 2022). Assertive behavior, students can show the behavior of daring to express opinions, being brave in terms of truth, honest and confident, firm in making decisions, appreciating and respecting others and not imposing their own will (Blegur et al., 2023). Assertive behavior is an important thing to pay attention to because it can support the

optimization of students' psychological development where it can foster a sense of comfort, calm, optimism and can improve their self-control abilities (Varii et al., 2020). This is in line with the opinion of Alberti & Emmons (2017, p. 45) that assertive individuals can experience self-improvement, expressiveness, can achieve their desired goals, can make choices for themselves and feel comfortable with themselves. Students with good assertive behavior will be able to learn well without any obstacles in conveying their intentions and goals (Gregersen & MacIntyre, 2017).

* **Corresponding Author:** Reynalyn Tayaban,  reyntayaban@gmail.com

Irisan National High School, Baguio City, Philippines
Address: Naguilian Rd, Tuba, Benguet, Filipina



Assertive behavior is very important for every student to have, being assertive is not an easy thing to do (Jitaru, 2019). Lack of assertive behavior can cause problems in the form of inability to develop themselves optimally, easily anxious, often feel depressed and uncomfortable. At Irian National High School, Baguio City, students' assertive behavior shows their non-assertive attitudes such as the behavior of students who lack confidence, lack of courage to express opinions, and some even achieve their rights in ways that can harm others.

Assertive behavior is the most important part for the continuity of student development in the ability to express their feelings towards themselves and others (Melhem, 2021). If this continues, it can cause problems. The problem can be in the form of personal and social problems. Student problems for example, students who have a lack of self-confidence will find it difficult to develop themselves for the better, students continue to be in discomfort because they cannot express what they do not like, can also experience stress disorders because many problems are difficult to express and solve (Jerusalem & Schwarzer, 2014). In group problems, it will make the group atmosphere not conducive, not united and there is social jealousy because it cannot fight for rights in the right way or by harming the rights of others.

Information services are guidance and counseling services that enable students to receive and understand sharing information that can be used as material for consideration and decision making for the benefit of students (Anyamene et al., 2019). Through this service students will gain insight into their assertive behavior (Afri et al., 2023). This information service can also be done classically by utilizing learning media (Odja, 2020). There are various learning media in education that can be developed and used to deliver learning materials in the form of modules, radio, television, computers, videos and others (Nicolaou et al., 2019). If in guidance and counseling learning materials are called service materials (Hossain & Faisal, 2013).

Media is seen as a communication tool in providing material to students, this is in line with Kreuter et al (2013), who revealed that basically learning in the classroom is a communication process. The counselor as a communication provider certainly needs media so that students as recipients of information are helped to understand the material presented. There are several reasons for the need for media in learning, including: 1) clarify the presentation of the message, 2) overcome the limitations of space, time and sensory power, 3) the use of appropriate and varied media can overcome the passive nature of students, 4) can equalize the experience and perception of students with the environment and reality, 5) provide a common experience to students about events in their environment (Marpanaji et al., 2018).

One of the effective media used in the implementation of information service activities to improve students' assertive behavior is modules. Module is a learning process about a certain unit of discussion that is arranged systematically, operationally and directed to be used by students in the process of understanding a certain topic by the Leasa et al (2016). Modules aim to facilitate students in learning the material. One module is made to teach a specific material so that students can achieve certain competencies.

This research seeks to use module-based information service media to improve students' assertive behavior. Through the use of information service modules, researchers tested it to improve students' assertive behavior.

2. METHOD

2.1 Research Design

This research is Research and Development (R&D). Gustiani (2019) explains that Research and Development (R&D) is a development method to produce a product and then the product is tested for effectiveness. The Research and Development (R&D) method was chosen because it can support the development of information service delivery tools using module media.

Research and development can be interpreted as a scientific way to research, design, produce, and test the validity of products that have been produced by Roper et al (2016). This research activity includes research, design, production, and testing. In this case, the product development carried out is a media module to increase assertive behavior in students at Irian National High School, Baguio City.

The research stages follow the development stages of Borg and Gall including (1) research and information collecting; (2) develop preliminary form a product; (3) preliminary field testing; (4) main product revision; (5) main field testing; (6) operational product revision; (7) operational field testing; (8) final product revision; (9) dissemination and implementation.

2.2 Research Object

This research was conducted in 2023. The research location is Irian National High School, Baguio City. The sample of this study amounted to 30 students who were taken using proportionate stratified random sampling technique, this technique is used when there is a population that has members elements that are stratified proportionally. Then the number of samples that must be taken includes the number of strata.

2.3 The Instrument

The instrument used in this development research is a questionnaire. The instrument readability test was carried out to determine the readability level of the statement items on the Rating Scale which will be used as a research measurement tool in schools.

Table 1. Reliability Test Results

Reliability Statistics	
Cronbach's Alpha	N of Items
.958	40

The results of the analysis show the instrument reliability coefficient of 0.958. the instrument consists of 40 questionnaire items

2.4 Data Processing

The results of data processing show that students who have a low assertive attitude have a pretest score < 80, while those who have a moderate assertive attitude have a pretest score of $80 \leq < 125$ and students who have a high level of assertive attitude with a pretest score ≥ 125 .

Table 3. Media expert validation results

No	Aspects	Percentage
1	View	90%
2	Instructions for use	89%
3	Material Quality	89%
	Average	89%

The results of the analysis show that student responses to the development of module-based information service media get a good response with an average value of 89% on appropriate criteria. Therefore, this module-

Table 3. Normality Test Results

	Tests of Normality					
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
assertive behavior pre-test	.094	30	.200*	.979	30	.806
assertive behavior post-test	.114	30	.200*	.974	30	.643

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

The results of the pretest and posttest normality test with 40 data using the Shapiro-Wilk sig normality test. pretest obtained results with a significant value of $.806 > 0.05$ and posttest with a significant value of $.643 > 0.05 = H_0$ is accepted and H_1 is rejected, meaning that the pretest and posttest data samples both come from normally dis-

Instrument Validity and Reliability Test. The validity test in this study was used to test the questionnaire instrument from each statement item, the results of the validity of the instrument obtained as many as 40 valid questionnaire items. While the reliability test results obtained the following results:

2.5 Data Analysis

In the data analysis process using (1) Test analysis requirements (normality test) (2) (dependent sample t-test). The purpose of conducting a paired t-test is to determine whether or not there is a change in the subject's condition between before and after treatment.

3. RESULT AND DISCUSSION

3.1 Result

1) The results of the validation of media experts resulted in the following scores:

based information service media can be used for students.

2) Normality Test Results

The following are the results of the normality test:

tributed populations, so the data can be analyzed with t-tests.

3) Paired Sample t-Test Results

The following Paired Sample T-Test results are obtained

Table 4. Paired Sample t-Test Results

		Paired Samples Correlations		
		N	Correlation	Sig.
Pair 1	assertive behavior pre-test & assertive behavior post-test	30	.770	.000

Paired Sample T-Test Results show that Sig = 0.000 <0.05, meaning that there is an increasing relationship in assertive behavior between before and after classical guidance in providing module-based information services seen from the posttest results which increase from each aspect, namely the aspect of expressing positive feelings after being given module-based information services obtained 81% of the pretest 64%, the self-affirmation aspect obtained results after providing information services 82% of the pretest 68%, and finally there was an aspect of expressing negative feelings in assertive behavior by obtaining 82% of the pretest 60%.

3.2. Discussion

Product development in this study produces guidance and counseling information services to optimize students' personal-social development. However, the limited media in providing this information service has an impact on students' understanding of the information material provided. Therefore, in the implementation of providing this information service using module media to attract students' interest so that students can focus on the material presented, understand and apply the material presented in providing information services. In line with that, Afifah et al (2018) say that the provision of module-based information services the material presented is easier to accept and gets a good response from students, this is evidenced by the final results after being given this module-based information service in the very good category.

The development of module-based information service media developed in this research stage uses the Borg and Gall model with 10 stages, but in this study it is simplified to only 5 stages due to adjustments to the population and limited research samples only carried out in a population of 1 school with a sample of no more than 100 samples and the research developed is only focused on testing the feasibility and effectiveness of the product (Ravista, 2021). Where the stages in the process of developing module-based information service media to improve students' assertive behavior include the preliminary stage for data collection, the planning stage, the product draft development stage, the field trial stage and finally the initial product improvement stage (Bahri et al., 2018).

This is in line with one of the objectives of the development research conducted by researchers, namely to

produce module-based information service media of excellent quality and feasibility (Sudarman & Ardian, 2021). So the researcher used the 5 stages of the Borg and Gall model (Aka, 2019). Seeing the success of previous research in developing the media developed and seeing the limitations of time and cost, it is considered effective to develop module-based information service media (Nurkhin et al., 2020). The success of this media development research is a renewal in providing service media to students so that it can continue to innovate and make it easier to help students in their personal-social development stage (Dunne et al., 2019).

The module media developed in this development research looks at various sides, one of which is seen from the selection of the language used, not all of which use standard language (Baker & Hüttner, 2017), the language chosen is in accordance with the age stage of development so that students are more interested, focused when studying this module and students more easily understand the essence or intent of the material exposure in the module (Hamid et al., 2017), then in terms of evaluation exercises in each chapter are made as if students are telling stories or pouring various social events that occur to themselves or in their social environment, but the purpose of the evaluation is conveyed appropriately because in addition to students telling various events that occur, they are also asked to find solutions that can solve their problems (Sadler, 2014). Thus students are more able to think rationally and can know what they should do or what response they give to the event.

Then for the characteristics of the developed module, it is made as flexible as possible, where students can access anywhere at any time when they feel they need it. The developed module is not only made in print mode but also made in the form of a flipbook, where students can access online via smartphones with no time limit. For filling out the evaluation sheet, there is also an online filling link that can be accessed directly through google form and the instructions for use are made as detailed as possible so that students can easily understand the steps.

4. IMPLICATIONS AND CONTRIBUTIONS

4.1 Research Implication

The theoretical implications of the results of this study are expected to contribute to science in the field of mo-

odule-based information service media to improve students' assertive behavior that is still lacking.

The contributions of the research results are as follows:

- 1) For Students (a) as providing knowledge about the importance of having an assertive attitude; (b) as knowledge of how to improve assertive attitudes by using module-based information service media.
- 2) For Teachers. The results of this study are expected to be an additional reference to improve students' assertive attitudes at school.
- 3) For Schools. The results of this study are expected to be an additional reference for educational institutions to improve their quality and quality, especially in increasing students' assertive attitudes using module-based information service media. In addition, the results of this study are expected to be able to realize many students who are assertive, so that they can make their students develop in their personal-social.

4.2 Research Contribution

This research contributes to the field of educational psychology and school counseling by demonstrating the effectiveness of information service modules in promoting assertive behavior among students. It provides empirical evidence that structured guidance interventions can positively influence students' social and emotional development, particularly in enhancing their ability to communicate confidently and respectfully.

Additionally, this study serves as a valuable resource for educators, counselors, and curriculum developers seeking practical tools to support students' personal growth. It also offers a foundation for future research aiming to refine and expand the use of information service modules in various educational settings and among diverse student populations.

5. LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

5.1 Research Limitations

We had time constraints in conducting this study, we did not have extensive access to time so the data we collected was not optimal.

5.2 Recommendations for Future Research Directions

Future research on the use of information service modules to enhance students' assertive behavior could explore several aspects to deepen understanding and improve effectiveness. Expanding the sample size and including diverse student populations would enhance the generalizability of the findings. Longitudinal studies could also be conducted to examine the long-term impact of these modules on students' assertive behavior. Additionally, comparing the effectiveness of information service

modules with other intervention methods, such as group counseling or social skills training, could provide valuable insights. Lastly, applying these modules in different educational settings, such as elementary schools, universities, or special education programs, would provide a broader perspective on their effectiveness.

6. CONCLUSION

The results showed that the process of developing module-based information service media to improve students' assertive behavior is in accordance with the stages of Research and Development (R&D) research according to Borg and Gall, starting from conducting literature studies and field studies, designing module materials with an attractive appearance, conducting validation, then conducting limited trials and finally product revision.

Module-based information service media developed by researchers based on student needs that encourage students to apply understanding with the aim of achieving assertive attitudes. The results of the study concluded that the development of module-based information service products to improve students' assertive behavior is high and has answered the problem formulation in this study. From the results of the study also the formulation of the problem can be answered obtained results in descriptive form that the development of module-based information service media to improve students' assertive behavior at Irisan National High School, Baguio City with the results of the percentage of each aspect, namely the aspect of expressing positive feelings after being given services.

Acknowledgments

Thanks to the authors to colleagues who have provided a lot of information to us in the implementation of this research.

Credit Authorship Contribution Statement

All authors contributed to the discussion of the results, participated in drafting and revising the manuscript, and approved the final version for publication. Reynalyn Tayaban: Conceptualization and Writing. Bai Raezza I. Guizo: Review and editing.

Declaration of GenAI in Scientific Writing

The authors declare that Generative Artificial Intelligence (GenAI) tools were employed in the drafting and revision of this manuscript to check spelling and grammar, identify typos, grammatical errors, suggest paraphrases, reduce passive voice, and eliminate repeated words, sentences, and unnecessary adverbs. The suggestions provided by GenAI were critically evaluated and

modified to ensure that the final draft remains representative of the authors' own work. All instances of Generative AI usage in this article were conducted by the authors in accordance with the *IJCP Generative AI (GenAI) Policy*, with the authors assuming full responsibility for the originality, accuracy, and integrity of the work."

Conflict of Interest Statement

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical Approval Statement

The author declares that this study was conducted in accordance with research ethics principles and has received ethical approval from the author's institution, including respect for participants' autonomy, confidentiality of data, and ensuring their safety and well-being, as outlined in the applicable research ethics guidelines.

REFERENCES

- Afifah, D. I., Rahayu, E. S., & Anggraito, Y. U. (2018). Development of E-Module Based Android for Teaching Material of Plantae Kingdom Topic. *Journal of Biology Education*, 7(1), 1-8. <https://doi.org/10.15294/jbe.v7i1.21934>
- Afri, J., Sarman, F., & Andiyaksa, R. (2023). Improve Students' Assertive Behavior using Assertive Training Techniques in Tenth Grade Students of Adhyaksa Jambi. *Pedagogy Review*, 2(2), 56-60. <http://dx.doi.org/10.61436/pedagogy/v2i2.pp56-60>
- Aka, K. A. (2019). Integration Borg & Gall (1983) and Lee & Owen (2004) models as an alternative model of design-based research of interactive multimedia in elementary school. In *Journal of Physics: Conference Series* (Vol. 1318, No. 1, p. 012022). IOP Publishing. <https://doi.org/10.1088/1742-6596/1318/1/012022>
- Alberti, R., & Emmons, M. (2017). *Your perfect right: Assertiveness and equality in your life and relationships*. New harbinger publications. <https://www.newharbinger.com/9781626259607>
- Anyamene, A., Akunne, L., & Nkanu, S. (2018). Enhancing guidance services in secondary schools in Anambra State through the use of information communication technology. *JEP*, 9(28). <https://iiste.org/Journals/index.php/JEP/article/view/44888>
- Bahri, B., Nuriah, T., & Idris, A. (2018). Development of Local Historical Learning Resources South Sulawesi Based on Character Education in Department of Historical Education Faculty of Social Science at State University of Makassar. *American Journal of Educational Research*, 6(3), 220-237. <http://dx.doi.org/10.12691/education-6-3-10>
- Baker, W., & Hüttner, J. (2017). English and more: A multisite study of roles and conceptualisations of language in English medium multilingual universities from Europe to Asia. *Journal of Multilingual and Multicultural Development*, 38(6), 501-516. <https://doi.org/10.1080/01434632.2016.1207183>
- Blegur, J., Haq, A. H. B., & Barida, M. (2023). Assertiveness as a New Strategy for Physical Education Students to Maintain Academic Performance. *The Qualitative Report*, 28(3), 865-885. <https://doi.org/10.46743/2160-3715/2023.5659>
- Dunne, D. M., Lefevre, C., Cunniffe, B., Tod, D., Close, G. L., Morton, J. P., & Murphy, R. (2019). Performance Nutrition in the digital era—An exploratory study into the use of social media by sports nutritionists. *Journal of sports sciences*, 37(21), 2467-2474. <https://doi.org/10.1080/02640414.2019.1642052>
- Gregersen, T., & MacIntyre, P. D. (2017). *Optimizing language learners' nonverbal behavior: From tenet to technique* (Vol. 112). Multilingual Matters. <https://doi.org/10.21832/9781783097371>
- Gustiani, S. (2019). Research and development (R&D) method as a model design in educational research and its alternatives. *Holistics (Hospitality and Linguistics): Jurnal Ilmiah Bahasa Inggris*, 11(2). <https://jurnal.polsri.ac.id/index.php/holistic/article/view/1849>
- Hamid, M., Aribowo, D., & Desmira, D. (2017). Development of learning modules of basic electronics-based problem solving in Vocational Secondary School. *Jurnal Pendidikan Vokasi*, 7(2), 149-157. <http://dx.doi.org/10.21831/jpv.v7i2.12986>
- Hossain, S., & Faisal, R. A. (2013). Guidance and counseling services in schools of Bangladesh: An exploratory study. *International Journal of Science and Research (IJSR)*, 2(10), 132-138. <https://www.ijsr.net/archive/v2i10/MDkxMDEzM DY=.pdf>
- Jerusalem, M., & Schwarzer, R. (2014). Self-efficacy as a resource factor in stress appraisal processes. In *Self-efficacy* (pp. 195-214). Taylor & Francis. <https://www.taylorfrancis.com/books/edit/10.4324/9781315800820>
- Jitaru, O. (2019). Strategies Of Assertive Communication In The Teaching Profession. *European Proceedings of Social and Behavioural Sciences*. <https://doi.org/10.15405/epsbs.2019.08.03.11>

- Kreuter, M. W., Farrell, D. W., Olevitch, L. R., & Brennan, L. K. (2013). *Tailoring health messages: Customizing communication with computer technology*. Routledge. <https://www.routledge.com/p/book/9780805833874>
- Leasa, M., Talakua, M., & Batlolona, J. R. (2016). The development of a thematic module based on Numbered Heads Together (NHT) cooperative learning model for elementary students in Ambon, Moluccas-Indonesia. *The New Educational Review*, 46, 174-185. <https://doi.org/10.15804/tner.2016.46.4.15>
- Marpanaji, E., Mahali, M. I., & Putra, R. A. S. (2018). Survey on how to select and develop learning media conducted by teacher professional education participants. In *Journal of Physics: Conference Series* (Vol. 1140, No. 1, p. 012014). IOP Publishing. <https://doi.org/10.1088/1742-6596/1140/1/012014>
- Melhem, M. A. (2021). The Impact of Assertiveness Training on Improving Social Efficacy among Higher Basic Stage Bullied Students. *Educational Sciences: Theory & Practice*, 21(3). <https://doi.org/10.12738/jestp.2021.3.003>
- Nicolaou, C., Matsiola, M., & Kalliris, G. (2019). Technology-enhanced learning and teaching methodologies through audiovisual media. *Education Sciences*, 9(3), 196. <https://doi.org/10.3390/educsci9030196>
- Nurkhin, A., Kardoyo, K., Pramusinto, H., Setiyani, R., & Widhiastuti, R. (2020). Applying blended problem-based learning to accounting studies in higher education; Optimizing the utilization of social media for learning. *International Journal of Emerging Technologies in Learning (ijET)*, 15(8), 22-39. <https://doi.org/10.3991/ijet.v15i08.12201>
- Odja, A. H. (2020). Minimizing misconception on the topic of temperature and heat by edmodo learning media. In *Journal of Physics: Conference Series* (Vol. 1521, No. 2, p. 022066). IOP Publishing. <http://dx.doi.org/10.1088/1742-6596/1521/2/022066>
- Paterson, R. J. (2022). *The assertiveness workbook: How to express your ideas and stand up for yourself at work and in relationships*. New Harbinger Publications. <https://www.newharbinger.com/9781648480270/>
- Ravista, N. D. (2021). An Analysis of the Need for Developing E-Module Based on Problem Based Learning Utilizing Virtual Laboratory on the Digestive System Material. In *6th International Seminar on Science Education (ISSE 2020)* (pp. 620-626). Atlantis Press. <https://doi.org/10.2991/assehr.k.210326.090>
- Roper, S., Micheli, P., Love, J. H., & Vahter, P. (2016). The roles and effectiveness of design in new product development: A study of Irish manufacturers. *Research Policy*, 45(1), 319-329. <https://doi.org/10.1016/j.respol.2015.10.003>
- Sadler, D. R. (2014). Beyond feedback: Developing student capability in complex appraisal. In *Approaches to assessment that enhance learning in higher education* (pp. 45-60). Routledge. <https://doi.org/10.1080/02602930903541015>
- Sudarman, S., & Ardian, A. (2021). The development of interactive module to support student centered learning. *Akademika: Jurnal Teknologi Pendidikan*, 10(01), 77-92. <https://doi.org/10.34005/akademika.v10i01.1344>
- Varii, M. Y., Leshchynska, O. A., & Terletska, Y. M. (2020). Role of organisational culture of the university in formation of psychological readiness of students to assertive behaviour. *Journal of Intellectual Disability-Diagnosis and Treatment*, 8(3), 497-504. <https://doi.org/10.6000/2292-2598.2020.08.03.2>

Author Information

* **Reynalyn Tayaban**, ✉ reyntayaban@gmail.com
 Irisan National High School, Baguio City, Philippines
 Address: CGHX+QGQ, Naguilian Rd, Tuba, Benguet, Philippines

² **Bai Raezza I. Guizo**, ✉ guizo.bay224@gmail.com
 Lourdes National High School, Bohol, Philippines
 Address: Lourdes High School, Daus - Panglao Rd, Panglao, 6340 Bohol, Philippines