JPPIPA 9(4) (2023)

Jurnal Penelitian Pendidikan IPA

Journal of Research in Science Education

http://jppipa.unram.ac.id/index.php/jppipa/index

Instrument Validation of Chemistry Learning Module with the Topic of Increasing Goat Weight for the Millennial Generation

K. Anom W.[1*], Made Sukaryawan[1], Abdurachman Ibrahim[1], Eka Ad'hiya[1], Rodi Edi[1]

[1] Chemistry Education, Sriwijaya University, Jl. Palembang-Prabumulih, Ogan Ilir Regency, Indralaya, South Sumatra, Indonesia, 30662.

Received: August 26, 2022
Revised: April 10, 2023
Accepted: April 25, 2023
Published: April 30, 2023

Corresponding Author:
K Anom W.
kanomwunsri@gmail.com

DOI: 10.29303/jppipa.v9i4.2070

Abstract: Module instrument validation plays an important role in ensuring the quality of the module. For this reason, the purpose of this study was to develop a valid instrument for the development of STEM-Integrated Chemistry Learning Module and chemically characterized Entrepreneurship Course for the millennial generation at Sriwijaya University's Chemistry Education Study Program. The instrument includes content, pedagogy, and design or practicality validation, which is valid, practical, and effective for limited trials. The respondents of this study were semester-6 students and lecturers of Chemistry Education Study Program, Faculty of Teacher Training and Education, Sriwijaya University. The results of instrument validation by experts showed that the average Aiken coefficient value on material was 0.92, pedagogy 0.73, and practicality 0.74, which are in very high and high categories. The results indicated that the module development instrument has met the validity and practicality criteria.

Keywords: Chemistry learning module; Goat weight; Millennial generation

Introduction

The problems of chemistry learning in the Entrepreneurship course at Sriwijaya University's Chemistry Education Study Program are, among others: (1) due to the covid-19 pandemic, learning is carried out online, (2) therefore, learning materials in the form of chemistry learning modules are needed so that the students as millennials which aged 20-39 years, (Ulfah, 2021) can study independently (Negsi et al., 2021), critically (Sundari, 2019; Wahyudi, 2020), innovatively and creatively (Hasan et al., 2021), adaptively, productively (Aziz et al., 2020), lifelong learning (Jannah, 2013), entrepreneurship (Ambarwati et al., 2020), interested in entrepreneurship will emerge when participating in training (Iswahyudi et al., 2018) and apprenticeship, (3) not all chemistry education graduates can be accommodated as State Civil Apparatus (civil servants) because the number of graduates is more than the government's capacity to accept graduates to be civil servants, so modules are needed to increase entrepreneurial motivation (Ulfah, 2021; Widiati, 2021), (4) modules for entrepreneurship courses are still very limited (only 7 titles) while learning is carried out at least 16 times; therefore, the topic of increasing goat weight is very potential to be developed, (5) entrepreneurship is important to support the Independent Learning Independent Campus program, (6) a valid, practical, and effective instrument is needed for limited trials to develop the module.

The respondents of pedagogy validation were development research experts (Purnomo et al., 2012). The validation instrument is also characterized to build Pancasila students with noble character, personality, mutual cooperation, and unity in diversity (Susilawati et al., 2021). Mutual cooperation referred to in this study is the existence of cooperation between students and goat entrepreneurs or goat breeders; to be successful goat entrepreneurs, students should be apprentices or partners or working together with successful goat breeders. The validation instrument contains items regarding the statement of cooperation agreement with goat breeders (Tarigan et al., 2017).

The novelty of instrument's content validity includes chemical characteristics, a specialty of vocational chemistry learning, namely practical skills in the world of work (Arfina et al., 2020; Asmorowati, 2009; Prayitno et al., 2016). In the instrument there are items

How to Cite:
Anom W.K.., Sukaryawan, M., Ibrahim, A., & Ad'hiya, E. (2023). Instrument Validation of Chemistry Learning Module with the Topic of Increasing Goat Weight for the Millennial Generation. *Jurnal Penelitian Pendidikan IPA*, *9*(4), 1600–1606. https://doi.org/10.29303/jppipa.v9i4.2070

regarding the procedure and steps to identify protein, fat, and carbohydrate compounds from goat feed (Qalsum et al., 2015; Ulandari, 2008; Wahyuni, 2009). The respondents of this validation were development research experts (Purnomo et al., 2012).

Practicality or design validation (Mardhiya, 2021) contains statements about the ease of reading and understanding the instructions and content of the module. The instructions and purposes of the module are stated in unambiguous words or sentences (one sentence having one subject, one predicate, one object, and one adverb), precise and clear punctuation marks, attractive colors, and appropriate fonts (Ramaniyar et al., 2019). This practicality validation was distributed walkthrough directly to the respondents as the users of the module, namely students.

The object of entrepreneurship is goats at affordable prices compared to cows. Goats are the favorite sunnah food of the Prophet Muhammad SAW. Eating goat meat needs to be followed and is very important and of high quality (Asrianto, 2016). From the description above, it is very important to develop a module validation instrument with STEM-approach and the topic of increasing goat weight.

This study was aimed at developing a validity instrument to develop the STEM-Integrated Chemistry Learning Module and chemically characterized Entrepreneurship Course for quality millennials at Sriwijaya University's Chemistry Education Study Program. The instrument includes content, pedagogy, and design or practicality validation which is valid, practical, and effective for limited trials (Mardhiya, 2021). This study was very useful in particular for (1) Chemistry Education students to improve student learning outcomes in the Entrepreneurship course, (2) to support the Independent Learning Independent Campus program, and (3) to improve the quality of Sriwijaya University's Chemistry Education graduates. In general, this study was very important because (1) more than 90 percent of the workforce are in the micro, small and medium-scale businesses so that entrepreneurship needs to be encouraged to support national economy (Ramadani et al., 2020), and (2) digital economy (Kurniati, 2021) is needed to overcome marketing competition and support lifelong learning in the Independent Learning Independent Campus program.

Method

This study used the ADDIE development model in combination with Tessmer's formative evaluation. Tessmer's formative evaluation stages in this study were (Tessmer, 1998).

At this stage, a material, pedagogy validation instrument was developed, and the product was validation instrument sheets. In addition, at this stage, the researcher designed a module draft which was evaluated independently (self-evaluation), so that a specific prototype was produced as the module draft. Furthermore, the validation instrument sheets and the specific prototype were submitted to 2 development research experts to be assessed for validity. The Aiken's formula was used to analyze the validation results as testing of the agreement between the two experts about the validity of instrument sheets.

At this stage, the practicality testing of specific prototype of module draft and practicality instrument were carried out by walkthrough to 3 one-to-one student respondents individually with relatively high, medium and low achievement levels.

At this stage of practicality testing, a small group of students with economic, social, parental educational backgrounds and different environments was given a specific prototype of the module draft.

Result and Discussion

Expert validation was carried out by development research experts with the initials ARI and RE. The results before and after the revision of the pedagogy validation instrument sheets are shown in Table 1 and Table 2.

Table 1. Statements on the Pedagogy Validation Instrument Sheet before Revision

Statement/ Description	Strongly Agree	Agree	Doubt	Disagree	Strongly Disagree
Suitable for learning atmosphere in the new normal era	5	4	3	2	1
Suitable for online learning atmosphere	5	4	3	2	1
Suitable for learning atmosphere in the 21st century	5	4	3	2	1
Suitable for learning atmosphere in Industrial Revolution 4.0	5	4	3	2	1

Table 2. Statements on the Pedagogy Validation Instrument Sheet after Revision

Statement/ Description	Strongly Agree	Agree	Doubt	Disagree	Strongly Disagree
Suitable for learning atmosphere for the millennial generation	5	4	3	2	1

The reviewers' suggestions in Table 1 were that items 37 to 39 should be deleted because the validation instrument sheets before revision was the main instrument that could be used in the covid-19 pandemic, the 21st century, and the industrial revolution 4.0 eras. While in Table 2 after revision, in accordance with the research title for the millennial generation, the new normal, Online, 21st century, and Industrial Revolution 4.0 eras could be set aside and eliminated.

The validation scores on the STEM-based Chemistry Learning Module for Entrepreneurship Course with the topic of increasing goat weight for the millennial generation at Sriwijaya University's Chemistry Education Study Program were 0.92, 0.73 and 0.74 from 2 validators. The results were the calculation using the Aiken's formula (1985), respectively on the material, pedagogy, and practicality of the module.

The levels of agreement in the Aiken's coefficient categories are shown in Figure 1 as the validation results of Aiken's V-calculated.

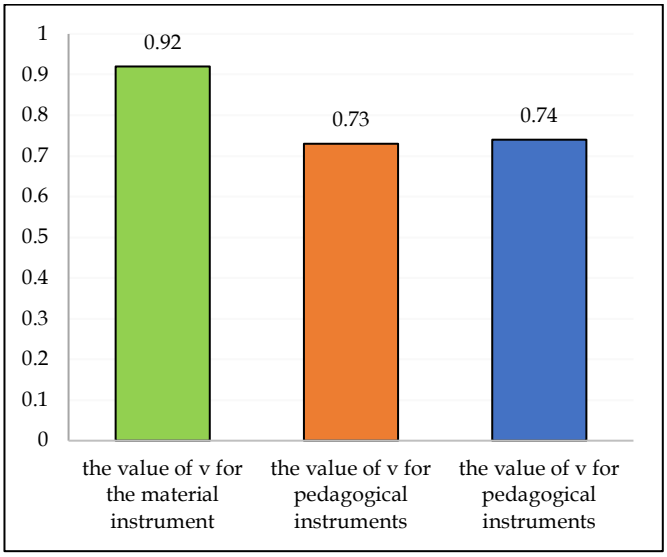

Figure 1. Aiken's v-calculated

Furthermore, regarding the material validation instrument, it was recommended that there be no "example" word. It would be better to delete the word because this sheet was directly used to obtain research data.

One-to-One

The design-testing instrument of the specific prototype and the instrument validation was used to assess the practicality by walkthrough to 3 student respondents.

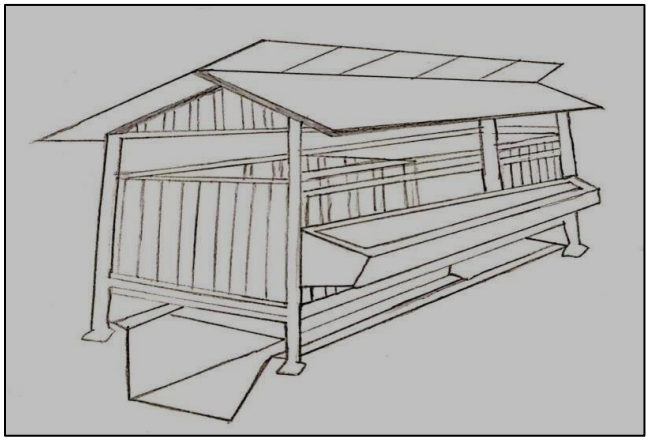

Figure 2. Goat cage design (before revision) Source: google internet

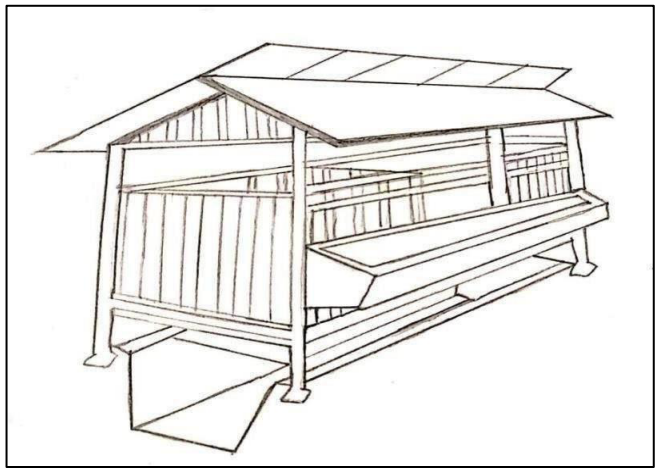

Figure 3. Revision of goat cage design (after)

The students individually one-to-one suggested, among others, the picture of goat cage design which was originally a bit dark to be made brighter. Figure 1: the Goat Cage Design before revision and Figure 2: Goat Cage Design after revision.

Small Group

Practicality-testing instrument, for a small group of students with different backgrounds (3 students with different levels of parental education, 3 students with different levels of family economy, 3 students with different social environments) were given the module draft as the specific prototype. Their suggestions include that before the revision, Figure 4 was too dark and it was revised to become brighter in Figure 5.

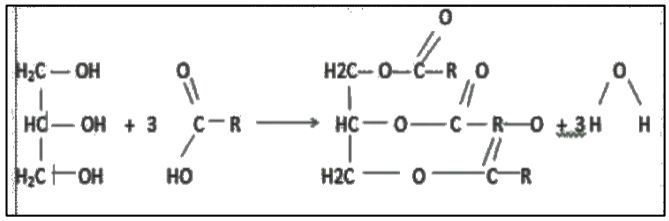

Figure 4. Fat formation reaction (before revision)

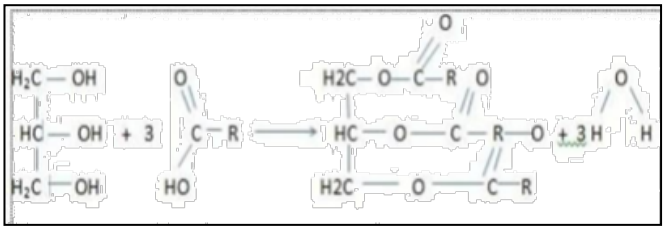

Figure 5. Fat formation reaction (after revision)(Mamuaja, 2017)

Chemical Characteristics of the Module

The chemical characteristics of this module are the identification or determination of chemical compounds such as fats, lipids, carbohydrates, vitamins, and minerals. These compounds are generally found in feed and goats.

Discussion

Expert validation (expert review)

Pedagogy validation instrument of statements or descriptors in Table 1 is a general and standard validation instrument, which can be used for conditions in the New Normal, Online, 21st Century, and Industrial Revolution 4.0 eras. In connection with the research title specific for the millennial generation, Table 2 is in line with the research title for the millennial generation, so the statement or descriptor was revised as in Table 2.

Aiken's V-coefficients of 0.92, 0.73 and 0.74 for the instrument validity of material, pedagogy, and practicality were greater than V-table of 0.67, meaning that the instrument was valid, so that the instrument could be used to obtain the data on the validity of STEM-based chemistry learning module for the Entrepreneurship course with the topic of increasing goat weight for the millennial generation at Sriwijaya University's Chemistry Education Study Program.

Aspects of material validation were presented in the instrument, including the material in the module in accordance with sub course-learning-outcome 1 and sub course-learning-outcome 2, presented in accordance with real problems in everyday life. The real problems in question are the problems of goat entrepreneurs to improve the economy and create jobs (Arfina et al., 2020; Asmorowati, 2009; Prayitno et al., 2016), think logically, critically (Sundari, 2019; Wahyudi, 2020), innovatively, creatively (Hasan et al., 2021), systematically, chemically characterized in the form of screenshots of protein, lipid, carbohydrate identification (Qalsum et al., 2015; Ulandari, 2008; Wahyuni, 2009), or vitamins (Badriyah et al., 2015; Techinamuti et al., 2018). Creative and innovative aspects were in the form of students determining the types of feed to increase goat weight during the growth period by browsing Google. Each student browsed a different type of feed. Furthermore, the students designed cages and initial costs different from other students for this goat entrepreneurship. This module has arrived at the reporting stage, while the trial has not yet been carried out. The trial would be more effective when apprenticeship is carried out with goat husbandry entrepreneurial partners. In the module validity instrument, entrepreneurship will appear when participating in training (Iswahyudi et al., 2018) and apprenticeship. Based on the results of interview with a goat farmer, he has been raising goats with his parents since he was a child. Apprenticeship and training in raising goats in this instrument could increase entrepreneurial motivation (Ulfah, 2021; Widiati, 2021).

The pedagogy validation instrument of the Chemistry Learning Module contains the Science, Technology, Engineering, Mathematics (STEM) approach (Capraro et al., 2013) me the problems. The characteristics of STEM approach are the existence of (a) problems, (b) problem solving plans, (c) problem solving trials, and (d) reporting of the results of trials. Specifically and in detail, the STEM approach in this module validation instrument includes (1) students reading/analyzing from the internet: "Types of Feed" to increase goat weight, each student having a different "type of feed", (2) students downloading the videos of "types of feed" to increase goat weight and copy the URL addresses, each student having a different video, (3) students downloading the "types of feed" to increase goat weight, and copy the URL addresses, each student having a different type of feed, (4) from points 2 and 3, students arranging the titles of substances or materials or supplements as feed to increase goat weight, each student having a different title, (5) students downloading (a) videos and/or practicum procedures, (b) and/or chemical analysis journals, (c) PPT of "types of feed" or supplements, or other substances to increase goat weight (copying the URL addresses too), (6) students designing sketches/drawings/plans of the places and cages for the goat weight increase cultivation, each student having a different design, (7) students preparing plans of the places of goat weight increase cultivation, each student having a different place, (8) students preparing initial costs/funding plans (for goat cages, feed, goat seeds, salary for maintenance staff), each student having a different funding plan, (9) students writing references, (10) students taking screenshots of chemical reactions and identifying basic compounds such as proteins, fats or lipids, carbohydrates, vitamins, and minerals in feed as the chemical characteristics (Asmorowati, 2009; Prayitno et al., 2016), the chemical characteristics are the novelty of module development conducted so far for Chemistry Education Study Program's Entrepreneurship Course, (11) students communicating/reporting the results of points 4 to 9 above, (12) the report should be typed using Word, in Times New Roman, one and a half spacing, font 12, A4 paper, the left and top margins 4 cm, the right and bottom margins 3 cm, collected in WhatsApp group

in one folder in Google drive (note that for point 5 just writing the URL addresses), (13) points 1 to 12 are take home (done in their respective homes individually) as a realization in the new normal era very suitable for the millennial generation (Anom et al., 2022). This module validation instrument is very important to develop the chemistry learning module as the culmination of development research. This instrument could make students innovative, creative and think critically in planning and formulating solutions to the problems of feed types to increase goat weight, according to the farm, cage plan, and fund available for each student. This instrument would direct and serve as a guide to a valid, practical, and effective module.

One-to-One

The design-testing instrument of specific prototype and the instrument validation was used to assess practicality by walkthrough to 3 student respondents with the initials RCL, YH, and WS individually one-to-one with relatively low, medium, and high achievement levels. The suggestions from the three students included a dark drawing of cage design before revision and a brighter drawing after being revised. The design testing also known as practicality testing about the darkness and brightness of an image in the module was reflected in the practicality validation instrument. This practicality validation instrument is very important for the convenience and ease of module users to read, study, and analyze the module. Thus, this module has its own attractiveness value for the millennial generation. Millennial generation is very potential and needs to be directed to its future so that they are motivated to become goat entrepreneurs in addition to being chemistry teachers. The sources of Figures 2 and 3 are written with URL links, not only written "google internet".

Small Group

The practicality-testing instrument was given to a small group, 9 students with different backgrounds consisting of 3 students with different levels of parental education, 3 students from different levels of family economy, 3 students from different social environments. They were given the module draft as the specific prototype. The initials of the 9 students were ZN, RRJ, NM, ASR, SAN, RA, A, R, and YA with different backgrounds. Their suggestions included that before revision, Figure 4 was too dark and it was revised to become brighter in Figure 5. It is important that the practicality testing was carried out to complete the practicality value of the module so that the sustainability of module use would be better and last longer.

Chemical Characteristics of the Module

The chemical characteristics of this module make it different from other modules. The chemical characteristics are in the form of screenshots of chemical identification or practicum of Vitamin C downloaded from Google.

Figure 6. Chemical characteristics of vitamin C identification (Amiliyatul et al., 2021)

Figure 6 shows the chemical characteristics of this module compared to the previous chemistry learning module at Sriwijaya University's Chemistry Education Study Program. Figure 6 also shows the visual identification of vitamin C from video screenshots on google internet. The validation instrument of the chemistry learning module in this case makes the

module attractive, thus add the practicality value of the module.

Conclusion

Based on the results and discussion, the material, pedagogy and practicality validation instrument developed was classified as in high validity category, with Aiken's V coefficients of 0.92, 0.73 and 0.74 as compared to V-table in the range of 0.60 to 0.79. The material validity instrument was in very high category as compared to V-table in the range of 0.80 to 1.00. The module validation instrument has been prepared with chemical characteristics according to the research objectives. The material, pedagogy, and practicality validation instrument developed could be used to measure the validity of the STEM-approach chemistry learning module for the Entrepreneurship course with the topic of increasing goat weight for the millennial generation.

Acknowledgements

The researcher would like to express his gratitude to the Rector of Sriwijaya University for funding the research or the publication of this article from the Budget Implementation List of the Public Service Agency of Sriwijaya University in Fiscal Year 2021, Number 023.17.2.6775/2022 dated 31st December 2021 in accordance with Rector's Decree Number 0109/UN9.3.1/SK/2022 dated 28th April 2022.

References

Ambarwati, A., & Sobari, I. S. (2020). Membangun Jiwa Kewirausahaan Di Era Milenial Bagi Mahasiswa Institut Stiami Kampus Tangerang Selatan. *Jurnal Komunitas : Jurnal Pengabdian Kepada Masyarakat*, *2*(2), 140–144. https://doi.org/10.31334/jks.v2i2.736

Amiliyatul, R., E., M., Affan, F., & Putri, M. T. (2021). *Video Identifikasi Vitamin C*. https://www.youtube.com/watch?v=HEgmhvk6w6g

Anom, W. K., Novriana, D., Ad'hiya, E., & Haryani, M. E. (2022). Expert Review Modul Produktivitas Ikan Mas untuk Pembelajaran Kimia di Era New Nornal. *Orbital: J. Pendidikan Kimia*, *6*(1), 49–59. https://doi.org/10.19109/ojpk.v6i1.11778

Arfina, R., Dj, L., Oktavia, B., & Kalmar, U. (2020). Development of Chemoentrepreneurship-Oriented Chemistry Module to Increase Students Entrepreneurial Interest of Class XI Even Semester Health Vocational High School. *International Journal of Innovative Science and Research Technology*, *5*(7), 1137–1142. https://doi.org/10.38124/IJISRT20JUL753

Asmorowati, D. (2009). Pembelajaran kimia menggunakan kolaborasi konstruktif dan inkuiri berorientasi chemo-entrepreneurship. *Jurnal Inovasi Pendidikan Kimia*, *3*(2), 476–483. http://journal.unnes.ac.id/nju/index.php/JIPK/article/viewFile/1284/1335

Asrianto, A. (2016). *Nilai gizi dan kandungan kolesterol daging kambing lokal jantan yang diberi pakan berbasis kulit buah kakao fermentasi*. Publikasi Ilmiah - Fakultas Peternakan Universitas Mataram.

Aziz, R. I. N., & Meilani, R. I. (2020). Motivasi dan Hasil Belajar Siswa SMK pada Mata Pelajaran Produktif, Adaptif dan Normatif. *J. Pendidikan Manajemen Perkantoran*, *5*(2), 154–168. https://doi.org/10.17509/jpm.v5i2.28835

Badriyah, L., & Manggara, A. B. (2015). Penetapan Kadar Vitamin C pada Cabai Merah (Capsicum Annum L.) Menggunakan Metode Spektrofotometri UV-VIS. *J. Wiyata*, *2*(1), 25–28. https://doi.org/10.56710/wiyata.v2i1.31

Capraro, R. M., Capraro, M. M., Morgan, J. R., & Slough, S. W. (2013). *STEM Project-Based Learning*. Sense Publishers. https://doi.org/10.1007/978-94-6209-143-6

Hasan, M., Arisah, N., Sasmita, F. A., Miranda, M., Putri, A. A., & Pattisina, C. D. (2021). Perilaku Berwirausaha Generasi Milenial di Era Pandemi COVID-19. *Jurnal Pendidikan Ekonomi Undiksha*, *13*(1), 224. https://doi.org/10.23887/jjpe.v13i1.34551

Iswahyudi, M., & Iqbal, A. (2018). Minat Generasi Milenial Untuk Berwirausaha. *Assets: Jurnal Akuntansi Dan Pendidikan*, *7*(2), 95. https://doi.org/10.25273/jap.v7i2.3320

Jannah, F. (2013). Pendidikan Seumur Hidup dan Implikasinya. *Dinamika Ilmu*, *13*(1), 1–16. https://doi.org/10.21093/di.v13i1.19

Kurniati, D. (2021). Eksistensi Generasi Millenial dalam Berwirausaha di Era Digital (Studi Kasus Online Shop Denia Donuts Palembang). *Journal Science Innovation and Technology (SINTECH)*, *1*(2), 37–45. https://doi.org/10.47701/sintech.v1i2.1066

Mamuaja, C. F. (2017). *Lipida*. Unsrat Press Cetakan Pertama.

Mardhiya, J. (2021). Pembelajaran Online di Program Studi Pendidikan Kimia: Survei Kesiapan Mahasiswa. *Journal of The Indonesian Society of Integrated Chemistry*, *13*(1), 32–42. https://doi.org/10.22437/jisic.v13i1.12263

Negsi, R., Hakim, A., & Fitriani, E. (2021). Penerapan Metode Integratif dalam Meningkatkan Hasil Belajar Peserta Didik. *Jurnal Ilmiah Islamic Resources*, *18*(1), 122. https://doi.org/10.33096/jiir.v18i1.126

Prayitno, M. A., Dewi, N. K., & Wijayati, N. (2016). Pengembangan Modul Pembelajaran Kimia Bervisi

SETS Berorientasi Chemo-Entrepreneurship (CEP) Pada Materi Larutan Asam Basa. *J. Inovasi Pendidikan Kimia*, *10*(1), 1617–1628. https://doi.org/10.15294/jipk.v10i1.6008

Purnomo, & Palupi. (2012). Pengembangan Tes Hasil Belajar Matematika Materi Penyelesai Masalah yang Berkaitan Dengan Waktu, Jarak dan Kecepatan. *J. Penelitian (Edisi Khusus PGSD)*, *20*(2), 151–157. https://e-journal.usd.ac.id/index.php/JP/article/view/872

Qalsum, U., Diah, A. W. M., & Supriadi. (2015). Analisis Kadar Karbohidrat, Lemak dan Protein dari Tepung Biji Mangga (Mangifera indica L) Jenis Gadung. *J. Akademika Kimia*, *4*(4), 168–174. https://doi.org/10.22487/j24775185.2015.v4.i4.7867

Ramadani, D. F., & Syariati, A. (2020). Ekonomi Digital dan Persaingan Usaha sebagai Pendorong Pendapatan UMKM di Kota Makassar. *ICOR: Journal of Regional Economics*, *1*(1), 24–33. https://journal3.uin-alauddin.ac.id/index.php/icor/article/view/19558

Ramaniyar, E., Alimin, A. A., & Hariyadi, H. (2019). Penggunaan Bahasa Indonesia Dalam Penulisan Artikel Ilmiah. *Jurnal Pendidikan Bahasa*, *8*(1), 34. https://doi.org/10.31571/bahasa.v8i1.1132

Sundari, C. (2019). Revolusi Industri 4.0 Merupakan Peluang Dan Tantangan Bisnis Bagi Generasi Milenial Di Indonesia. *Prosiding Seminar Nasional Dan Call For Papers*, *Fintech dan E-Commerce untuk Mendorong Pertumbuhan UMKM dan Industri Kreatif*, 555–563. https://rb.gy/xpodi

Susilawati, E., Sarifudin, S., & Muslim, S. (2021). Internalisasi Nilai Pancasila dalam Pembelajaran Melalui Penerapan Profil Pelajar Pancasila Berbantuan Platform Merdeka Mengajar. *Jurnal Teknodik*, *25*(2), 155–167. https://doi.org/10.32550/teknodik.v25i2.897

Tarigan, D. T. S., Wiryawan, I. W., & Mudana, I. N. (2017). *Analisis Perjanjian Kerjasama Kemitraan Pt.Go-Jek dengan Driver Berdasarkan Undang-Undang No.13 Tahun 2003 Tentang Ketenagakerjaan*. Program Kekhususan Hukum Bisnis, Fakultas Hukum Universitas Udayana.

Techinamuti, N., & N, P. (2018). Review: Metode Analisis Kadar Vitamin C. *J.Farmaka Suplemen*, *16*(2), 309–315. https://doi.org/10.24198/jf.v16i2.17547

Tessmer, M. (1998). *Planning and Conducting Formatif Evaluation*. Philadelphia: Kogan.

Ulandari, T. (2008). Uji Kandungan Karbohidrat, Protein dan Lemak Kecap Tanpa Fermentasi Moromi dari Kara Benguk (Mucuna pruriens (L.) DC.) Hasil Fermentasi Rhizopus oligosporus: Pengaruh Lama Perendaman. In *J. Departement of Biology, Faculty of Mathematics and Natural Sciences*. Sebelas maret University.

Ulfah, M. (2021). Motivasi berwirausaha generasi millennial. *Akuntabel*, *18*(2), 2021–2336. https://doi.org/10.30872/jakt.v18i2.9584

Wahyudi, A. (2020). Profil Keterampilan Berpikir Kritis dan Kreatif Calon Guru Kimia pada Perkuliahan Biokimia. *Orbital: Jurnal Pendidikan Kimia*, *4*(2), 99–110. https://doi.org/10.19109/ojpk.v4i2.6612

Wahyuni, S. (2009). Uji Kadar Protein dan Lemak pada Keju Kedelai dengan Perbandingan Inokulum Lactobacillus bulgaricu dan Streptococcus lactis yang Berbeda. In *Skripsi Program Studi Pendidikan Biologi Universitas Muhammadiyah Surakarta*.

Widiati, A. (2021). Analisis Motivasi Berwirausaha Pada Generasi Milenial di Kota Pontianak. *JIsEB*, *2*(1), 71–81. https://rb.gy/lsfu1