

Cultivating Commercial Agricultural Culture Among Rural Communities In East Malaysia Through Module Development

Halina Sendera Mohd Yakin¹, Abdul Hair Beddu Asis²,
Rafidah Nordin³, Nor Azizun Rusdi⁴ Januarius Gobilik⁵
, Rudy Ansar⁶

¹Centre for the Promotion of Knowledge & Language
Learning
University Malaysia Sabah.

²Centre for the Promotion of Knowledge & Language
Learning
University Malaysia Sabah.

³Centre for the Promotion of Knowledge & Language
Learning
University Malaysia Sabah.

⁴Institute for Tropical Biology and Conservation
University Malaysia Sabah.

⁵Faculty of Sustainable Agriculture
University Malaysia Sabah.

⁶Faculty of Business, Economics & Accountancy
University Malaysia Sabah.

Abstract

Agricultural culture has become part of the cultural identity and livelihood of Malaysians. However, the passage of time and the development of technology have transformed the persona of modern society who has developed the tendency of urbanization in earning a living in other sectors that are perceived to be more popular and provide the desired outcomes compared to the agricultural sector. Ironically, the global mainstream reality coupled with the Covid-19 pandemic shows that Malaysia's economic landscape has increasingly been affected by the dependency on foreign countries and the devaluation of the country's imports in relation to food resources. To cultivate a commercial agricultural culture in rural communities, particularly in Sabah, this interdisciplinary study focuses on the development process of three modules related to the cultivation, innovation, and marketing of an herb known locally as

'bawing." Surveys, interviews and participant observation are used to collect both quantitative and qualitative data. The module development process is discussed based on the combination of the ADDIE and Sidek Module Development (SMDM) models. These modules can be utilized to undertake the future knowledge transfer program and contribute towards the strategic planning or modus operandi of 'bawing' cultivation and commercialization. Strengthening gardening or farming culture should be promoted especially among the youth to support human capital development, socio-economic enhancement and green sustainability to enjoy the nation's development in line with the policies of Shared Prosperity Vision 2030, Sustainable Development Goals 2020 (SDG2020) agenda and Sabah Maju Jaya Development Plan (2021-2025).

Keywords: Agricultural Culture; Commercial; Bawing; ADDIE Model; Sidek Module Development Model; East Malaysia.

Introduction

The phenomenon and issues of resources scarcity as well as food security that strike the world on the verge of post-modern endemic has had a major impact towards various landscapes of Malaysian life as well as the country's economy. The scenario has boosted the agricultural sector as the main composition in the country's budget planning. For Sabah, located on Malaysia's portion of the Borneo Island in South East Asia, the agriculture sector is the third highest sector contributing to the gross domestic product (GDP), amounting to 16. 1% which makes Sabah the third largest contributor of economic activity in the agricultural sector in Malaysia. In an effort to increase the state's production rate and ensure that the self-sufficiency rate is in the optimum position, the Sabah government via the 'Sabah Maju Jaya' development plan (2021- 2025) have targeted three main agendas in accordance with the SMJ Slogan, namely S (Sektor)- the three main sectors of economic growth (agriculture, industrial and tourism); M (Modal Insan)- Human Capital and the well-being of the people; as well as J (Jaringan)- infrastructure network and green sustainability.

In this regard, the Sabah government has allocated a total

of RM560.39 million to the agriculture sector, roughly about 60% of the total budget with the amount of RM931.21 million, ahead of the industrial as well as tourism sectors at RM142. 86 and RM227.97 million respectively. To achieve this goal, the government ensures that the productivity and quality of production in the agricultural sector are enhanced by using green agricultural technology innovation. In addition, the government also aims to increase the research and development to strengthen the state's food security and safety level. Human capital development has also become priority to ensure that agricultural skills are constantly improved and the income of Sabahan farmers, breeders and fishermen are simultaneously increased to attract youths to participate in the sector (The Department of Sabah Chief Minister, 2021).

The Covid-19 pandemic which has plagued the world since December 2019, has changed the social norms in the contemporary era which eventually has prompted a new norms or culture of digital dependency. The movement control orders that physically restrict human affairs as well as contact or communication has encouraged humans dependency on digital applications. The pandemic has transformed the conventional culture of communication, learning, working, trading and doing daily activities. The conventional way of doing businesses has also affected by this pandemic causing businesses to opt to digital platform for survival. In this digital horizon, the skills of using and owning the internet are critical to facilitate daily activities among the community especially in marketing. Through the concept of infrastructure networking, the Sabah government has devised a digital government concept which is expected to become a reality in 2025 in line with the development of the 'Sabah Maju Jaya' roadmap. Digitalisation initiatives have been implemented based on the 5A principle, namely Accessible by Anyone at Anytime, Anywhere by Any Mobile Device. In a nutshell, the digital culture as the new cultural norm is gaining space and will continue to characterise the landscape of business industry and the life of a contemporary society particularly in Sabah.

As for agricultural culture, it has become part of the cultural identity and livelihood of Malaysians for ages. However, the passage of time and the development of technology

have transformed the persona of modern society who has developed the tendency of urbanization in earning a living in other sectors that are perceived to be more popular and provide the desired outcomes compared to the agricultural sector. Ironically, the global mainstream reality coupled with the Covid-19 pandemic shows that Malaysia's economic landscape has increasingly been affected by the dependency on foreign countries and the devaluation of the country's imports in relation to food resources.

To address those related issues, this interdisciplinary study is initiated to cultivate a commercial agricultural culture among rural communities, particularly in Sabah by focusing on the development process of three modules related to the cultivation, innovation, and marketing of an herb known locally as 'bawing'. 'Bawing' is an herb plant that is synonymous with Sabahan. Symbolically, it can be considered as the cultural identity of the state's multi-racial society. Based on previous studies, 'bawing' which is scientifically termed as *ocimum basilicum* has been claimed to possess beauty, environmental, spiritual, health as well as medicinal benefits. (Please refer to studies by Seyed M.A Razavi & Sara Naji Tabasi, 2023; Reza Farahmandfar, Mohammad Reza Salahi' Maryam Asnaashari, 2019; Y Yuliani et.al, 2022; Adithya Guntur et.al, 2021; Fri Rahmawati & Hertina Silaban, 2021; Fanny Maulida Junita et.al, 2020; Sholichah Rohmani dan Muhammad Kuncoro, 2019; Ema Lindawati at.al, 2014; Sri Rahayu et.al, 2017; Walton, 2021; Jurry Foo et.al, 2016; Meliza Harianja, Havizur Rahman & Sri Wigati, 2021; Nurul Elyani et.al, 2021; Paramita Septianawati, Hernayanti & Gratiana Ekaningsih W. 2020; Fanny Maulida Junita et.al, 2020; Alifia Ramadanti et.al, 2021; Darakhsha Kauser Sheikh & Ashwini Kumar Dixit, 2015; Khader Ahmad et.al, 2019).

'Bawing' is also known as basil in western countries. In east Malaysia, 'bawing' is commonly used as flavor and aroma enhancer in traditional ethnic cuisines, such as ikan ampap, various types of soups as well as vegetables and ulam-ulaman (Malaysian salad). A fragrant 'bawing' aroma can also be utilised as an original fragrance and antiseptic. The manufacturing and marketing of bawing-based products can produce profitable output in many aspects such as herbal garden tourism innovation, medicine, pharmaceuticals, cosmetics, gastronomy and so on.

Acknowledging the potential of 'bawing' as an herb that contain countless benefits in various aspects, the researchers believe that it can help in promoting local herbs and simultaneously cultivating commercial agricultural culture among communities that can eventually contributes significantly and positively towards socioeconomic development of the country. Surveys, interviews and participant observation have been utilized to collect both quantitative and qualitative data. The module development process is discussed based on the combination of the ADDIE and Sidek Module Development (SMDM) models. These modules can be employed to undertake the future knowledge transfer program and contribute towards the strategic planning or *modus operandi* of 'bawing' cultivation and commercialization.

Literature Review

Previous studies have shown that module development plays a major role in empowering the education system. It can facilitate the teaching and learning through various methods, platform as well as mechanism utilized in the process. A study by Shaiful Hazmir & Irdyanti (2022) on Systematic Review Analysis of Module Development stated that the effectiveness of module development in teaching and learning in technical and vocational education systems is evidenced in the findings of previous studies on the importance of module development. Their study concluded that the development of modules brings effectiveness to the development of Technical and Vocational Education (TVET) and the development of innovative products for Teaching Aids (ABM) and Teaching Contents (BBM). This is based on the evidenced by the trend of publications in the previous years that shows that articles on the importance of module development in teaching and learning are widely published. The development of module in teaching and learning have brought effectiveness to the teaching and learning process handled by the instructors and simultaneously produced effectiveness towards student achievement.

Up to date there are several development models that can act as reference in guiding the development of a module such as Sidek Module Development Model (Ahmad Razif, Syed Mohamad & Nurul Fazzuan Khalid, 2021; Yee Mei Heong et.al, 2020; Nasir, Amalia and Salmah, 2020; Hamzah, Baharuddin & Ali, 2019; Azia, Abu Bakar &

Ashardi, 2019; Nurul Iman & Mastura, 2016; Amalia & Sidek, 2012; Sidek 2001; Sidek & Jamaluddin 2005), Dick and Carey Model (Zwawua Orfega, 2021), ADDIE Model (Imed Bouchrika, 2022; Zwawua Orfega, 2021; Moustafa Mohamed, 2020; Amarumi & Arasinah, 2019), ASSURE Model (Patma Sopamena et.al, 2022; Sami Hameed, Raheemah Rwayyih & Ali Raheem, 2019), Tazkiyat al-Nafs by Imam Ghazal Model (Md Noor, Nurul Ain & Norazani, 2016), Rusell Model (Ros Eliana, 2014), Design and Development Research Model (Parthiban et.al, 2022) as well as Needs Analysis Model (Salleh et.al, 2022). All these development models have their own uniqueness and can be distinguished or compared based on the nature of perspective, stages, approach and procedure. Eventhough each model has its own advantages and disadvantages, the primary objective of all models is certainly to offer a good module to facilitate the teaching and learning journey.

Most of the 21st centuries studies and literatures that have been reviewed focuses on the educational aspects and system such as studies that had been conducted by Shaiful Hazmir & Irdayanti (2022) and Ros Eliana (2014) on TVET; Ahmad Razif, Syed Mohamad & Nurul Fazzuan Khalid (2021) on academic intervention; Patma Sopamena et.al (2022) on geometry; Azia, Abu Bakar & Ashardi (2019) on flipped classroom & gamification; Sami Hameed, Raheemah Rwayyih & Ali Raheem (2019) on Teaching science textbook; and Parthiban et.al (2022) on special educational needs. Some studies also relate module development with theraphy, counselling or psychoeducational such as studies by Amelia & Sidek (2013), Md Noor, Nurul Ain & Norazani (2016), Zwawua Orfega (2021) and also Nurul Iman & Mastura (2016). There were also studies that connect module development with specific skills such as leadership skills (Hamzah, Baharuddin & Ali, 2019), problem solving skills (Yee Mei Heong et.al, 2020), soft skills (Salleh et.al, 2022), life skills as well as critical thinking skills (Moustafa Mohamed, 2020; Sami Hameed, Raheemah Rwayyih & Ali Raheem, 2019). In a nutshell, those studies associated to module development highlight the cognitive, affective and/or psychomotor aspects of an individual.

A research that link module development with agricultural aspect is quite limited. A study by Amarumi & Arasinah

(2019) pertaining to green skills (Gs) teaching module was undertaken by utilising ADDIE development model. With the thought in mind that the elements of green skills should be included in technical and vocational education as an added value, so no harm would be done to the environment by people who are science and technology-sensitive, hardworking, law-abiding and with integrity, in the conducts of their everyday life, they developed a Gs teaching module to provide knowledge on green skills in primary schools. According to them, ADDIE Model is suitable for the development of instructional or teaching modules because it is a systematic approach for design, development, implementation, and teaching evaluation. In addition, ADDIE Model is also suitable with learning goals that are student- centered, innovative, genuine and reliable.

In accordance with the study by Amarumi & Arasinah (2019), this article also focuses on the module development process using ADDIE Development model. In contrast, the module development integrate another popular model namely the Sidek Module Development Model (SMDM) in developing modules pertaining to the 'bawing' cultivation, innovation as well as marketing. The author believes that both models are suitable because the modules are developed for future knowledge transfer program purposes that target the transformation of Knowledge, Attitude, Skills and Aspiration (KASA) among the targeted students or respondents. The three proposed modules combine both conventional and contemporary learning styles which systematically tutor and student-centered and simultaneously incorporated various aspects that target all three aspects of cognitive, affective and/or psychomotor of the students or respondents. The modules also apply contemporary platform in designing the contents particularly canva which are famously known for its online graphic design tool.

ADDIE Development Model

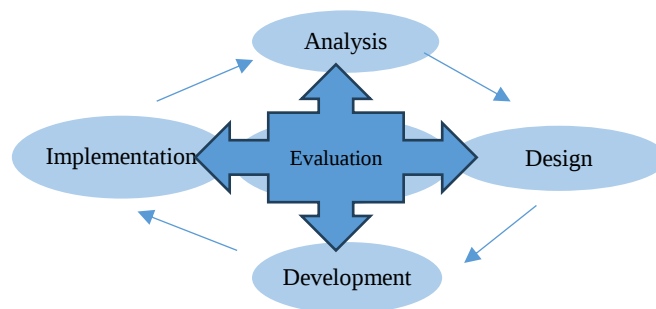
ADDIE development model is a model that is based on behaviorism, which was pioneered by Dick and Carry (1996). ADDIE model has an organised and complete stage of module development which has systematic procedures in creating a module. With its acronym ADDIE that stands for Analysis, Design, Development, Implementation and

Evaluation, ADDIE module also has similarities with other module development models such as identifying student needs, implementation and evaluation for the learning process. The five stages in the construct of ADDIE model is suitable for the development of a module, starting with a needs analysis process and ending with the evaluation process. Figure 1 illustrates the directional process in the ADDIE Model which shows that each evaluation can be conducted for every stage in the development phase of the ADDIE module because evaluation is important before proceeding to the next stage. The ADDIE Model is an interactive instructional design process, where the results of the formative evaluation of each phase may lead the instructional designer back to any previous phase. The end product of one phase is the starting product of the next phase (McGriff, 2000)

Figure 1

The ADDIE Module Development Process

(Improved and Adapted from Gagne, Wager, Golas & Keller, 2005; McGriff, 2000)

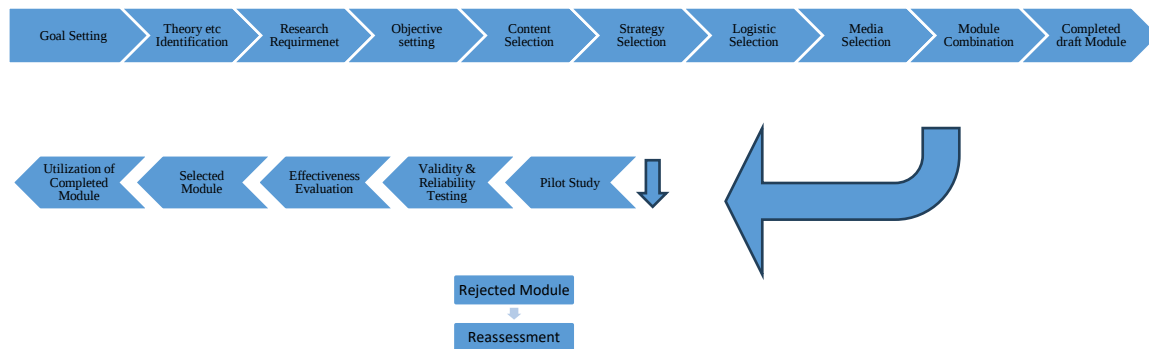


Sidek Module Development Model (SMDM)

The SMDM is divided into two different stages. The first phase involves module preparation process and the second stage focusses on evaluation process. The preparation stage has nine steps (please refer figure 2), begin with the aims of module setting and end with the combination of activity (so called as intervention) into one complete module. It is called a draft because the module has not been validated and measured its reliability. The second phase of the SMDM is to evaluate the draft module. In this stage, the developed module needs to be tested in a pilot study in order to ensure the validity and reliability of the module. If the draft module is proved to have a very high validity and reliability, then the process in developing a module is

considered completed. The selected module is ready to be utilized whereas the rejected module will be reevaluated. The Sidek Module Development Model is presented in Figure 2 as below:

Figure 2 The First and Second Phases of Sidek Module Development Model
(Improvised and Adapted from Sidek & Jamaludin, 2005).



Findings and Discussion

The 'Bawing' Cultivation, Innovation & Marketing Modules Development Process

The development of the three modules, namely Bawing Cultivation, Bawing Innovation and Bawing Marketing will be explained by combining and improvising both ADDIE and SMDM models as below:

The First Stage (Module Pre-Development Process: Goal & KASA identification)

The first stage in ADDIE Development Model is 'analysis'. This can be interpreted as 'goal setting, identification of theory, rationale etc, research requirement and objective setting' in SMDM. In this research, the objective of the modules is to cultivate commercial agricultural culture among rural communities through knowledge transfer program, by focusing on the identification as well as transformation in terms of Knowledge, Attitude, Skills and Aspiration (KASA) aspects pertaining to cultivation, innovation, and marketing of 'bawing'. The researchers believe that by spreading knowledge and skills regarding the cultivation, innovation and marketing of the object (bawing), it can help in nurturing positive attitudes and shaping aspirations towards commercial agricultural culture among students as well as communities at large.

Therefore, in this stage, the researchers have developed a questionnaire form that centralise on the four aspects of KASA. The primary objectives of the questionnaire are to identify the KASA levels as well as contributing factors that curb the cultivation, innovation and marketing of bawing herbs among rural communities in Sabah. The questionnaire has gone through validity test by experts. Upon receiving the feedback from experts, the researcher prepared the permission letters to Sabah State Education Department (JPNS) as well as selected schools to conduct the fieldwork within the school compound. The questionnaire forms then were distributed among respondents during the fieldwork period (pilot study) conducted at the targeted location. In this study, participants or respondents consist of 100 students from secondary school in Kota Belud, Sabah. The quantitative data was then analysed by using SPSS. Briefly, the statistical analysis showed that the research respondents have a moderate level of knowledge (score 2.70), high aspiration (score 3.92), positive attitude (score 3.24) and low skills (score 1.78) pertaining to bawing cultivation, innovation and marketing.

The Second Stage (Preparation and Initiation of Module development)

The second and third stages in ADDIE model are 'design' and 'development'. These stages can be related with the process of 'content, strategy, logistic and media selection' as well as 'module combination' and 'completed draft module' processes in SMDM. Design means to determine and design the instructional method that will be used. The design process should be systematic and specific. This is the stage where information is transferred from the analysis phase to a physical sketch which is used in the development process (Amarumi & Arasinah, 2019). In this study, the three modules were designed and developed based on the quantitative data analysis which was conducted previously. After analysing the KASA levels among the respondents, the modules were strategically and systematically developed. The three different modules were developed by co-researchers from various field of study which were purposely selected based on their specific expertise. The criteria for selection are based on the nature of three different modules which involved 12 researchers from Universiti Malaysia Sabah, namely seven lecturers from the

Centre for the Promotion of Knowledge & Language Learning, three lecturers from the Institute for Tropical Biology and Conservation, a lecturer from Faculty of Sustainable Agriculture and a lecturer from Faculty of Business, Economics and Accountancy. Those researchers are experts in communication and cultural studies, language studies, TESL, environmental sustainability, community development, parks and protected area conservation, ecotourism studies, plant biotechnology, plant taxonomy, multi and cross-disciplinary agronomist, e-business, consumer behavior, financial literacy, banking, market research and green practises in entrepreneurship and IoT in agriculture.

In this stage, series of workshops were implemented among the co-researchers to discuss and prepare the modules. They were divided into three groups which specifically focus on three different modules but incorporated and guided with the same goal. The teaching and learning method or instrument is designed based on contextual and thematic learning perspectives that concentrates on understanding (knowledge), skills, motivation (attitude and aspiration) as well as evaluation (assessment). It integrates both traditional or conventional as well as virtual or digital mechanism to attract the cognitive, affective and sensory aspects of an individual. Apart from utilizing printed materials, it also incorporating the ICT and IoT learning education using new media technology that use both audio and video presentation. Briefly, the modules were prepared in writing and also utilizing canva for education (online graphic design tool). The materials were saved and downloaded for printing & evaluation purposes. Briefly, the teaching and learning materials were prepared in both hardcopy and softcopy versions. Hardcopy is needed to cater those communities who are deprived from internet access and gadget ownership. This is due to the fact that the digital world has not yet touched all strata of society, notably in rural Malaysia, including Sabah. This scenario resulted in the phenomena of digital poverty and illiteracy in society. Basically, the three modules contains the systematic but also flexible teaching syllabus, hands on activities and teaching aids.

The Third Stage (Evaluation & Implementation: ToT and Knowledge Transfer Program Preparation)

The fourth stage in ADDIE model is 'implementation'. This stage can be correlated with the second phase of module development in SMDM which comprises of 'Pilot study' as well as 'Validity and Reliability Testing to evaluate the module'. The implementation stage functions to test the efficacy as well as possible problems that may arise in the design and development phases (Amarumi & Arasinah, 2019). In this research, the implementation stage involved the process of acquiring the module validation and credibility, undertaking amendments, training the trainers who have implemented the modules and also implementing the knowledge transfer program among the respondents. Upon the completion of the draft, the researcher appointed experts to validate the modules. This process took quite some time because the experts need to inspect the draft for three different modules and then submitted feedback to the researcher for improvement process. After doing thorough improvement and series of content as well as technical inspection, the validated modules were sent to printing company for KTP purposes.

The final stage (The Module Post-development Process: Evaluation, KASA transformation, MyRA, Publication and IPR obtainment)

Evaluation is a systematic process that determines the quality and effectiveness of the teaching design in the final product. The researcher needs to constantly evaluate the advantages and disadvantages of each previous phase (Amarumi & Arasinah, 2019). The 'evaluation' stage in ADDIE model is quite similar to few last stages in the second phase of SMDM. In this study, the validated quality modules has been edited and proofreaded to comply with the publisher rules for publication purposes. Those modules were also submitted for copyright obtainment from the Intellectual Property Corporation of Malaysia (MyIPO) via the university funding and approval to safeguard the intellectual property right (IPR) of the modules. Apart from that, those modules have also been successfully published after obtaining the ISBN number and barcode from Perpustakaan Negara Malaysia (The National Library of Malaysia). It is anticipated that the copyright obtainment will bring score in the Malaysia Research Assessment (MyRA) under section E.4 (Other IPRs). In addition, the

accomplishment of the KTP will also be reported and obtained score (at least 3 star rating) in the Malaysia Research Assessment (MyRA) under section G 6a & 6b (Knowledge/ Technology Diffusion Projects/ Assimilation-Social Innovation).

With regard to the utilization of the modules for KTP purposes or other related programs, the researchers will assess the transformation of KASA aspects among the respondents after a timely or opportune period of undertaking the KTP. This will be done by distributing simple questionnaire (either hardcopy or softcopy using google forms). The KASA transformation will be analysed and recorded by comparing the quantitative data obtained before and after the implementation of each KTP program. The comparative analysis is needed to determine whether the KTP was successful in transforming the respondents in terms of KASA aspects so that the research primary goal will be successfully accomplished. By conducting KTP or other related programs systematically and consistently, the evaluation and improvement of the modules can be sought continuously over time to ensure that those modules are beneficial in a long haul.

Conclusion

The cultivation, innovation and marketing modules are knowledge and skill-based modules that were developed based on ADDIE Module Development & SMDM Models. Both models were chosen because they suits the research context. After adapting and improvising both models, the authors came up with four stages of modules development pertaining to the cultivation of commercial agricultural culture among rural communities in East Malaysia, particularly Sabah. Those stages start with the module pre-development process that focuses on 'Goal' as well as 'KASA Identification' and end with module post-development process that highlights the 'Evaluation, KASA Transformation, MyRA & IPR Obtainment'. With the KTP purposes in mind that concentrates on the KASA aspects, the modules development process has undergone a dynamic and systematic development phase.

The modules were designed based on KASA identification as guidelines. To improve the modules, further studies can be implementd by identifying challenges or factors that

curb the cultivation of commercial agricultural culture among rural community. Apart from that, the survey also involved only 100 secondary students. Therefore the outcomes are not able to represent the overall population of the region. It is recommended that future studies should expand the sample to include a larger population from across the Sabah territory. In addition, the modules were developed by university lecturers or researchers from UMS. For future planning, maybe the university researchers can collaborate with different stakeholders from industry, NGO as well as community to include practical or down-to-earth elements in the modules.

The development of the three modules has significantly multiplying effects. It does not only affects the communities particularly the students but it simultaneously benefit the researchers, university, relevant stakeholders including the government and policy makers. Indirectly, it affects the whole social organisation or social system in the country at large. It is hoped that the transformation in KASA aspects among the respondents can bring the research aim to realisation. Those modules can be utilised to undertake the future knowledge transfer program and contribute towards the strategic planning or *modus operandi* of 'bawing' cultivation. In a nutshell, the development of the modules is significance and relevance in cultivating commercial agricultural culture among contemporary society. Strengthening gardening or farming culture should be promoted especially among the youth to support human capital development, socio-economic enhancement and green sustainability to enjoy the nation's development in line with the policies of Shared Prosperity Vision 2030, Sustainable Development Goals 2020 (SDG2020) agenda and Sabah Maju Jaya Development Plan (2021-2025).

Acknowledgements

The author acknowledges Universiti Malaysia Sabah for the funding of the projects under Strategic Grant Scheme (DKS2306-2023: Cultivating commercial agricultural culture among rural communities in Sabah through the cultivation, innovation and marketing of 'bawing'); and Living Lab Grant Scheme (DLV2308: Innovating communities and promoting local herbs through the nursery development and knowledge transfer program of 'bawing' cultivation,

innovation and marketing); as well as the Research Group of Commercial Agricultural Culture, UMS.

References

- Adithya Guntur, Monica Selena, Anastasia Bella, Giovanny Leonarda, Adelsiana Leda, Dewi Setyaningsih, Florentinus Dika Octa Riswanto. (2021). Kemangi (*Ocimum basilicum* L.): Kandungan kimia, teknik ekstraksi, dan uji aktivitas antibakteria. *Journal of Food and Pharmaceutical Science*, 9(3), 513-528.
- Ahmad Shahbudin Ariffin, Zakaria Abas & Nazim Baluch. 2015. Issues and Challenges of Integrated Agro-Food Supply Chain: An Overview of Malaysian Food Security. *Australian Journal of Basic and Applied Sciences*, 9(13), 171-174.
- Alifia Ramadanti, Dyah Rahmasari, Winda Maulana, Desy Erika Rahayu, M. Imam Asshidiq & Raditya Weka Nugraheni. (2021). Formulasi masker peel-off ekstrak daun kemangi (*Ocimum Sanctum*) sebagai sediaan anti jerawat. *Medical Sains*, 6(1), 57-64.
- Allen, M. (2012). Leaving ADDIE for sam an agile model for developing the best learning experiences, East Peoria, IL: Versa Press.
- Alwi, A., Kamis, A., Mohd Affandi, H., Faizal Amin, N.,Y., & Che Rus, R. (201). Green skills: innovation in the subject of design and technology (d&t), proceeding of the 3rd international conference on education, 2017, 145-154.
- Arasinah Kamis, Ramlee Mustapha & Norwaliza Abdul Wahab. (2016). Green Skills as an Added-Value Element in Producing Competent Students. *Journal of Engineering Research and Application*, 6(11): 12-21.
- Arasinah Kamis, Amarumi Alwi, Bushra Limuna Hj Ismail, Normah Zakaria & Faizal Amin Nur Yunus. (2017). Integration of green skills in sustainable development in technical and vocational education. *International Journal Of Engineering Research And Applications (IJERA)*, 7(12), 08–12.
- Azia Sulong, Abu Bakar Ibrahim, Ashardi Abas. (2019). Development of gamyflip-pro module and determination of its content validity. *International Journal of Academic Research in business and social sciences*, 9(6), 1184–1193.
- Bramley, G.L.C. (2019). *Lamiaceae (Labiatae)*. *Flora Malesiana* 23(1): 1-424.
- Branch, R.(2014). *Instructional design: The ADDIE approach*. 3th ed. New York: Springer.
- Darakhsa Kauser Sheikh and Ashwini Kumar Dixit. (2015). Plants in the Holy Qur'an: A Look. *World Journal of Pharmacy and Pharmaceutical Science*, 4(8): 715-738.
- Dick, W., & Carey, L. (1996). *The systematic design of instruction*. 4th ed. New York: Harper Collin.

- Ema Lindawati Nindy Lestarie Eneng Nurlaela Mara Anda Rival Siti Maryati. (2014). Inovasi “kewangi” sebagai gel antiseptik alami dari minyak atsiri kemangi (*Ocimum Canum*). Laporan Akhir Program Kreativitas Mahasiswa. Institut Pertanian Bogor.
- Fanny Maulida Junita, Endah Setyaningrum, Sutyarso, Nismah Nukmal. (2020). Ekstrak daun kemangi (*Ocimum Sanctum*) sebagai anti skabies terhadap marmut (*Cavia Porcellus*). Jurnal Medika Malahayati, 4(1): 47-52.
- Fri Rahmawati & Hertina Silaban. (2021) .Bioactivity of kemangi leaves (*Ocimum sanctum*) and ruku leaves (*Ocimum tenuiflorum*). International Journal of Health Sciences and Research, 11(5): 379-391.
- Gagne, R. M., Wager, W. W., Golas, K. C., & Keller, J. M. (2005). Principles of instructional design. Belmont, Ca: Wadsworth.
- Hairuddin Mohd Amir, Ahmad Zairy Zainol Abidin, Khairul Fithri Abdul Rashid & Syahrin Suhaimee. (2020). Agriculture Food Supply Chain Scenario during the COVID-19 Pandemic in Malaysia.
- Hamzah, R., N A F Baharuddin , N.A.F and Ali, S. (2019). Development of leadership transformation module for off-campus students, IOP Conf. Series: Materials Science and Engineering, 506.
- Imed Bouchrika. (2022). Education. The ADDIE model explained: Evolution, steps, and applications.
- Jabatan Ketua Menteri Sabah. (2021). Halatuju Sabah Maju Jaya. Pelan Pembangunan Sabah Maju Jaya (2021-2025). Kota Kinabalu: Jabatan Perkhidmatan Awam Negeri Sabah. Retrieved on May 11th 2022 from <https://pubhtml5.com/jwug/lmav> Jabatan Perancangan Bandar Dan Desa Semenanjung Malaysia.
- Jamaludin Ahmad. (2016). Modul motivasi diri. Kuala Lumpur: Dewan Bahasa dan Pustaka.
- Jurry Foo, Abdul Latiff Mohamad, Mustaffa Omar & Ahmad Aldrie Amir. 2016. Utilitarian Tumbuhan Ubatan di Tamu Pantai Barat Sabah. Geografia-Malaysian Journal of Society and Space, 12(12), 99-112.
- Kamis, A., Alwi, A., Hj Ismail, B.L., Zakaria,N.,& Nur Yunus, F.A. (2017). Integration of green skills in sustainable development in technical and vocational education. International Journal Of Engineering Research And Applications (IJERA), 7(12), 08–12.
- Khader Ahmad, Zulkifli Mohd Yusoff, Khalijah Awang, Rozana Othman, Monika @ Munirah Abd Razzak,Nurulwahidah Fauzi6, Mohd Asmadi Yakob & Mohd Farhan Md Ariffin. (2019). Tumbuhan Selasih Dalam al-Quran Dan Hadith: Analisis Terhadap Manfaatnya Berasaskan Kepada Penyelidikan Semasa. Journal of Islamic Studies, 4(1):106-125.
- Khairani Afifi Noordin. 2018. Agriculture: Addressing Food Security in Malaysia. The Edge Malaysia, Oct 8, 2018.

- Md Noor Saper et. al. (2016). Kesahan dan kebolehpercayaan modul i-SC (islamic spiritual counseling) ke atas pelajar bermasalah tingkah laku. *International Journal of Islamic Thought*, 9 (June), 32-43.
<https://doi.org/10.24035/ijit.9.2016.004>
- Meliza Harianja, Havizur Rahman & Sri Wigati. (2021). Invitro: Evaluasi aktifitas peluruhan batu ginjal ekstrak daun kemangi (*Ocimum Basilicum*) menggunakan spektrofotometer serapan atom. *Jurnal Sains dan Kesehatan*, 3(3): 451-457.
- Mohd Afifi Bahurudin Setambah. (2017). Pembangunan dan pengujian modul kaedah pengajaran berasaskan adventure terhadap pencapaian statistik asas, kemahiran berfikir kritis dan kemahiran kepimpinan, Unpublished phd thesis, Universiti Pendidikan Sultan Idris.
- Morrison, G. R., Ross, S. M., K.Kalman, H., & Kemp, J. E. (2011). *Designing effective instruction* (6th ed.), San Francisco, Ca: John Wiley & Sons.
- Moustafa Mohamed Abdelmohsen. (2020). The Development and Validation of a Module on Enhancing Students' Critical Thinking, Collaboration and Writing Skills, *SAR Journal*, 3 (4), 166-177.
- Nasir Len, Amalia Madihie and Salmah Mohamad Yusoff . (2020). Development of cognitive therapy group intervention (CTGI) on resilience among adolescents. *Journal of Cognitive Sciences and Human Development*, 6(2), 27-36.
- Nurul Elyni Mat Shaari, Deny Susanti and Shafida Abd Hamid. (2021). Essential oils from the leaves of *Ocimum Basilicum* L., *Persicaria Odorata* and *Coriandrum Sativum* L. in Malaysia: antiurolithic activity study based on calcium oxalate crystallisation. *Science Letters*, 15(2), 13-25.
- Nurul Iman Abdul Jalil & Mastura Mahfar. (2016). The validity and reliability of rational emotive behavioural therapy module development for university support staff. *Asian Social Science*, 12(2), 129-137.
- Paramita Septianawati, Hernayanti, Gratiana Ekaningsih W. (2020). Pengaruh ekstrak etanol daun kemangi (*Ocimum Bacilicum* L.) terhadap kadar B2 mikroglobulin, asam urat dan gambaran histologi ginjal pada tikus putih. Galur wistar (rattus novergicus strain wistar) yang diinduksi monosodium glutamat. *Herb Medicine Journal*, 3(1), 18-31.
- Parthiban Govindasamy, Noraini Abdullah, Rohaizat Ibrahim & Yoong Soo May. A conceptual framework to design and develop creativity clay module to teach special educational needs (sens) students with learning disabilities in primary school, *South Asian Journal of Sosial Sciences And Humanities*, 3(4), 79-94.
- Patma Sopamena, Ayani Lifumangau, Syafruddin Kaliky, Fahruh Juhaevah, Nurlaila Sehuwaky, Nurlaila Sopamena (2021).

- Application of the assure learning model on geometry, *Matematika dan Pembelajaran*, 9 (1), 31-42.
- Rancangan Malaysia Keduabelas (2021-2025): Keluarga Malaysia-makmur, inklusif, mampan. Ucapan YAB perdana menteri di dewan rakyat, 27 september 2021. retrieved october 20th 2021, from <https://www.pmo.gov.my/2021/09/teks-ucapan-perbentangan-rancangan-malaysia-ke-12-2021-2025-rmke-12/>.
- Reza Farahmandfar, Mohammad Reza Salahi, Maryam Asnaashari. (2019). Flow behavior, thixotropy, and dynamic viscoelasticity of ethanolic purified basil (*Ocimum bacilicum* L.) seed gum solutions during thermal treatment. *Wiley Food Sci Nutr*, 7,1623–1633.
- Ros Eliana Ahmad Zuki. (2014). Development of integrated holistic teaching guide module for technical and vocational education teacher trainees, *Journal of Education and Practice*, 5(8), 58 – 68.
- Salleh Amat, Alida Ali, Mohd Izwan Mahmud, Dharatun Nissa Puad Mohd Kari, Abu Yazid Abu Bakar, Zarina Mizam Mohd Ismail, Ku Suhaila Ku Johari, Mohd Hasrul Kamarulzaman (2022), Needs analysis of soft skills psychoeducational intervention module among aggressive adolescents, *Journal of Positive School Psychology*, 6(5), 4452–4461.
- Seyed M.A. Razavi & Sara Naji-Tabasi. (2023). Rheology and texture of basil seed gum: A new hydrocolloid source. *Advances in food rheology and its application*. 2nd Edition. Elsevier, 413- 458.
- Shaifuddin, S. H., & Nashir, I. M. (2022). A systematic review analysis on module development: systematic review analysis of module development in technical teaching and learning for technical and vocational education systems. *International Journal of Academic Research in Business and Social Sciences*, 12(4), 1160–1173.
- Sholichah Rohmani dan Muhammad Kuncoro. (2019). Kuncoro uji stabilitas dan aktivitas gel handsanitizer ekstrak daun kemangi. *Journal of Pharmaceutical Science and Clinical Research*, 01, 16-28.
- Sidek Mohd Noah & Jamaludin Ahmad. (2005). Construction module: How to build training modules and academic modules. Serdang: Universiti Putra Malaysia.
- Sidek Mohd Noah, & Jamaludin Ahmad. (2005). Pembinaan modul: Bagaimana membina modul latihan dan modul akademik, Serdang: Universiti Putra Malaysia.
- Sri Rahayu, Lenny Irmawaty Sirait, Tetty Rina Aritonang, Rosdiana Natzir, Muh Nasrum Massi, Syahrul Rauf, Mochammad Hatta, Emma Kamelia. (2017). *Ocimum Basilicum* as alternative natural cancer care. *International Journal of Sciences: Basic and Applied Research*, 34(3), 302- 308.
- Troskie, D.P., Mathijs, E & Vink, N. (2000). Characteristics of the

- agricultural sector of the 21st century. *Agrekon*, 39(4), 586-596.
- Walton, A.A. (2021). *Ocimum basilicum*: Taxonomy, cultivation and uses. New York: Nova. Science Publishers Inc.
- Yee Mei Heong, Nuraffefa Hamdan, Kok Boon Ching, Tee Tze Kiong, Nurulwahida Azid. (2020). Development of integrated creative and critical thinking module in problem-based learning to solve problems, *International Journal of Scientific & Technology Research* Volume 9(3), 6567-6571.
- Yolanda R., & Oreste J. (2017). Acceptability level of developed material (sai) using assure model. *The Educational Review*, 1(3), 61–69.
- Y Yuliani, Putut Har Riyadi, Eko Nurcahya Dewi, Irwandi Jaswir, Tri Winarni Agustini. (2021). *Ocimum basilicum* (kemangi) intervention on powder and microencapsulated spirulina platensis and its bioactive molecules. *F1000Research*, 10(485), 1-20.
- Zolkifli, A.H., Kamin, Y., Azlan, B.A.L., Yahya, B., & Awang Z. (2016). Generic green skills industry and perspectives on technical education and vocational training (TVET). *TVET@asia*, 6, 1-13. online: retrieved on may 10th 2022 from http://www.tvet-online.asia/issue6/zolkifli_et_al_tviet6.pdf.
- Zwawua Orfega. (2021). Development of an educational module against tramadol abuse and its effectiveness among youths in benue state, Nigeria. Thesis Doctor of Philosophy, Universiti Sains Malaysia.