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Development of an Encyclopedia Book for Anatomy and Morphology of Plants on the Morphological Identification of Orchid Plants (Orchidaceae) in Kampoeng Anggrek Kediri

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ABSTRAK

Rendahnya pemahaman mahasiswa tadris biologi terhadap materi morfologi tumbuhan khususnya Orchidaceae sehingga diperlukan pengembangan sumber belajar. Penelitian ini bertujuan mengembangkan ensiklopedia "Identifikasi Morfologi Orchidaceae" dan menguji kelayakannya. Penelitian dan Pengembangan dilakukan dalam 2 tahapan, yakni identifikasi morfologi Orchidaceae dan pengembangan ensiklopedia dengan model ADDIE (analisis, desain, pengembangan, implementasi, dan evaluasi). Hasil penelitian, sebelas tumbuhan anggrek yang teridentifikasi memiliki kesamaan terletak pada bagian bunga yang termasuk dalam tenda bunga karena tidak dapat dibedakan antara kelopak dan mahkota. Buku ensiklopedia berisi taksonomi tanaman anggrek, nama ilmiah, deskripsi identifikasi tanaman anggrek beserta gambarnya. Hasil persentase skor ahli materi sebesar 77,17%, ahli media sebesar 88%, dan dosen Anatomi dan Morfologi Tumbuhan sebesar 83,65%. Hasil implementasi siswa diperoleh skor persentase rata-rata sebesar 85,34%. Ensiklopedia yang dikembangkan memiliki kualitas yang layak untuk dijadikan sebagai sumber belajar.
Kata kunci: ensiklopedia; morfologi; orchidaceae.

ABSTRACT

The low level of understanding of biology students on plant morphology material, especially Orchidaceae, requires the development of learning resources. This study aims to develop an encyclopedia "Identification of Orchidaceae Morphology" and test its feasibility. Research and development was carried out in 2 stages, namely identification of the morphology of Orchidaceae and development of an encyclopedia using the ADDIE model (analysis, design, development, implementation and evaluation). The results of the study, the eleven identified orchid plants had similarities in the flower parts included in the flower tent because they could not be distinguished between the petals and the corolla. An encyclopedia book containing taxonomy of orchid plants, scientific names, identification descriptions of orchid plants along with pictures. The results of the percentage score of

material experts was 77.17%, media experts were 88%, and lecturers of Plant Anatomy and Morphology were 83.65%. The results of student implementation obtained an average percentage score of 85.34%. The developed encyclopedia has a decent quality to be used as a learning resource.
Keywords: encyclopedia; morphology; orchidaceae.

INTRODUCTION

Identification of plant morphology is a process used to determine the phenotypic characters of plants by observing leaves, stems, flowers, roots, and so on which covers all plant morphology. Identification of plant morphology can be used to classify plant groups (Sri and Linayati, 2015).

Orchid belongs to the Orchidaceae family which is the largest family of flowering plants. Orchidaceae is a family level from kingdom Plantae, phylum Tracheophyta, class Liliopsida (*Catalog of Life*, 2020). One of the countries that has the greatest wealth of orchids is Indonesia. Indonesia has environmental conditions that meet the requirements to guarantee the life of orchid plants (Hertin, et al, 2018). As many as approximately 6,000 species of the 45,000 species of orchid plants in the world, based on the ITIS Report, the Orchidaceae family consists of 135 genera, 459 species, 7 subspecies, 51 varieties, a total of 652 (*Integrated Taxonomic Information System*, 2020). Indonesia itself has tourist areas that offer information about cultivation Orchid plants, one of which is Kampoeng Orchid in Kediri, East Java, which was created as a medium for introducing and learning about orchid cultivation, nurseries and marketing.

Based on the results of interviews with lecturers for the Plant Anatomy and Morphology course and a needs analysis provided online via Google Form to fifth semester Tadris Biology students at IAIN Tulungagung who have taken the Plant Anatomy and Morphology course, there are 41 students from four classes each each class containing approximately 40 students obtained the result that Tadris Biology students at IAIN Tulungagung experienced difficulties related to the morphology of the Orchidaceae family because it did not allow the Orchidaceae family to be used as practicum material, as well as the limited support for studying plant morphology material.The selection of teaching materials in the form of encyclopedia books as student learning resources is the right step. This reason is the author's consideration in choosing an encyclopedia book as a product in this study, so that it can be used as a companion book for students and encourages learning motivation for Tadris Biology students in the course of Plant Anatomy and Morphology.

The encyclopedia book was chosen as the product developed in this study because it is more interesting than textbooks because encyclopedia books not only present material but also present interesting pictures so as to attract interest in learning. The information presented in encyclopedia books is basic and concise (Para Mitta, 2016).

The purpose of this study is to describe the morphological identification of orchid plants in Kampoeng Anggrek Kediri and then make it a learning medium in the form of an encyclopedia book and describe the results of the validation and readability test of the encyclopedia book produced to determine the feasibility of the encyclopedia book.

Several studies related to this research have been conducted. The relevance to this research is described as follows:

1. Diversity of Orchid Species in Several Captives in Ampera Village and Karunia Village, Palolo District, Sigi Regency, Hestin Setia Wardhani, et al. September 2018, as a result, the diversity of natural orchid species in captivity in Ampera Village was classified as abundant with the highest species being the Grammatophyllumstapeliiflorum orchid and the lowest being the Dendrobium sp.
2. Morphological Characterization of Lindak F1 Hybrid Cacao (Theobromacacao L.) Plants in Educational Tourism at Kampung Coklat Blitar as a Source for Learning Biology, Anisa Fajar Kumala Wardani, Tadris Biology IAIN Tulungagung 2019, with the result, the F1 lindak hybrid cocoa plant has a taproot system. The plant stem has a sympodial branching type and has two forms of vegetative shoots namely orthotropic shoots and plagiotropic shoots. The learning source of the cocoa booklet was declared fit for use as a biology learning resource, both in terms of the feasibility of material experts and media experts
3. Identification of Ferns in the Parangkikis Waterfall Area, Pagerwojo Tulungagung as a Source for Studying Biodiversity, Ayu Renita, Tadris Biology, IAIN Tulungagung 2019, with the results, Parangkikis has sufficient conditions to support the fern ecosystem. Found 20 species of ferns consisting of 2 classes, 9 families and 13 genera. The average percentage of the Fern Encyclopedia assessment is in the category of "Very Valid or Very Good"
4. Morphological and Anatomical Characterization of Watercress (Nasturtum spp.) in Batang and Semarang Regencies as a Learning Resource in the Morphology and Plant Anatomy Course, Lilis Sa'adah, Biology Education Walisongo State Islamic University Semarang 2015, with the results of calculating the questionnaire given to expert examiners materials, media experts, and users indicated that the designed booklet was good with a percentage of 80%, but revisions were still needed because there were still some corrections from experts and users.
5. Characteristics of Leaf Morphology in the Faculty of Tarbiyah and Teaching Science as a Reference for Plant Morphology Practice, Patimah Ram, Biology Education at Ar-Raniry State Islamic University 2016, with the result that there are 27 types of plants in the Faculty of Tarbiyah and Teacher Training consisting of 16 families which have different characteristics. varies, from leaf surface, leaf veins, leaf tip, leaf base, leaf edge and even leaf color, which is then presented in the form of a pocketbook as an additional reference for practicum development media in the Plant Morphology Course.

METHODE

This research was conducted on December 13 2019 to March 18 2020, in Kampoeng Anggrek Kediri which is located in Ringinsari Hamlet, Sempu Village, Ngancar District, Kediri Regency. This research is research that uses research and development methods (Research & Development) which is a type of research that systematically aims to develop or produce a product (Nusa Putra: 2015). This research is divided into two stages, the first stage is a qualitative research which aims to identify the morphology of orchid plants (Orchidaceae). The second stage is development which aims to develop learning media in the form of encyclopedia books using the ADDIE model which consists of five stages, namely Analysis, Design, Development, Implementation, Evaluation. Used related, structured and simpler compared to other development models. The flow of the ADDIE development model can be seen in Figure 1.

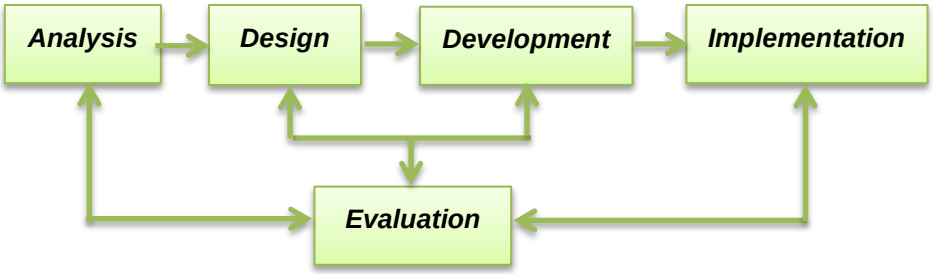

Figure 1. ADDIE Model Development Design

The tools and materials used in this study were thermometers, hygrometers, pH meters, cameras, stationery, rulers, and plastic. The samples used in this study were all parts of the morphology of the orchid plants found in Kampoeng Anggrek Kediri using observation and documentation techniques in the data collection process. The instruments used for data collection in this study included: 1) Needs analysis instrument, 2) Plant morphology indicator instrument, 3) Material expert assessment instrument, 4) Media expert assessment instrument, 5) Anatomy and Morphology lecturer assessment instrument plants, 6) Readability assessment instrument for students who have taken Plant Anatomy and Morphology courses. The data analysis technique used in this study is qualitative and quantitative analysis. Qualitative data were obtained from suggestions given by the validator, while quantitative data were obtained from the assessment items listed in the instrument using a Likert scale of 1-4. The data obtained is then sought for the percentage with the following calculation formula:

$$\text{Eligibility (K)} = \frac{total\ Score}{highest\ score}\ x\ 100\%$$

Table 1. Category Validation Assessment

No.	Validity Criteria	Validity Level
1.	76.0%-100%	Very worth it
2.	60.0% - 75.9%	Worthy
3.	26.0% - 50.9%	Pretty decent
4.	0% - 25.9%	Not feasible

(Source: Ridwan, 2013)

RESULT AND DISCUSSION

First Phase Research (Identification of orchid plant morphology)

Before observing the morphological identification of orchid plants, researchers first examined the environmental conditions used as supporting data for this study. Environmental parameters are used to determine whether the conditions at the study site are in accordance with the growing requirements of orchid plants (Orchidaceae). Measurements were taken during the day at 14.30 WIB. See table 2.

Table 2. Environmental Conditions in Kampoeng Anggrek

No.	Environmental parameters	Conditions at the study site
1.	Air temperature	20^{o}C
2.	Humidity	36 %
3.	Water pH	6,9
4.	Water temperature	29^{o}C
5.	The pH of the growing medium	5

The planting media used in Kampoeng Orchid Kediri are black moss or kadaka root, white moss (Sphagnum Moss), and coconut fiber. The three planting media have met the requirements for orchid growing media, namely not easily weathered, not easily a source of disease, has good absorption, is able to bind water and nutrients properly. Research on the morphology of orchids (Orchidaceae) was carried out in two places, namely Kampoeng Anggrek Kediri and the Biology Laboratory of Sayyid Ali Rahmatullah State Islamic University Tulungagung. Table of research results regarding the morphological identification of orchid plants (Orchidaceae) can be seen in Appendix 1.

Phase Two Research (Development)

Analysis

At this stage an analysis was carried out regarding the need for the development of an encyclopedia of morphological characteristics of the Orchidaceae family. The first step taken was to distribute a needs analysis questionnaire online via Google Form to 5th semester Tadris Biology students who had taken the Plant Anatomy and Morphology course. There were 41 students randomly from 4 classes who filled out the questionnaire. The following results from distributing needs analysis questionnaires to students can be seen in table 4.

Table 4. Student Needs Analysis Questionnaire Results

No.	Question	Student Answers
1.	Do you know about plant morphology?	97.6% answered yes
2.	Have you ever observed plant morphology in plants directly?	97.6% answered yes
3.	If so, what types of plants did you observe?	12.5% answered never namely observation on mango plant
4.	Do you know the technique of identifying plants?	85.4% answered yes
5.	Do you understand the characteristics of each plant organ clearly?	82.9% answered yes
6.	Do you know the orchid plant as Indonesia's "Puspa Pesona"?	75.6% answered yes
7.	Have you ever observed the characteristics of orchid plants?	41.5% answered yes
8.	Apart from modules, textbooks, and powerpoints, do you use other learning resources to study plant morphology material?	82.9 answered yes
9.	Does your lecturer use media that can help you in studying plant morphology material?	85.4% answered yes
10.	In your opinion, is it necessary to use encyclopedia media as a medium for studying plant morphology material?	97.6% answered yes

Based on the results of the questionnaire, the analysis of learning media needs for orchid plant encyclopedia books can be obtained concluded that Tadris Biology students already understand the morphological characteristics of plants and have made observations, but not orchid plants. Many students agree with the making of an encyclopedia of the characteristics of the Orchidaceae family as a study companion.

Researchers also conducted interviews with lecturers of Plant Anatomy and Morphology courses. The results of the interviews indicated that students experienced difficulties related to the terms used in the plant identification process and students were also unable to show concrete morphological characteristics of a plant. Orchid plants are not used as practical materials because the price is relatively expensive and not easy to obtain. This is what makes students not know specifically related to the morphology of orchid plants.

Syllabus analysis for the course of Plant Anatomy and Morphology was also carried out to determine indicators that required learning materials in the form of encyclopedia books. The results of the syllabus analysis can be seen in table 5.

Table 5. Table of Syllabus Analysis

Indicator	Learning materials	Types of Teaching Materials
Describe plant morphology	Plant Anatomy and Morphology	Encyclopedia book

Design

At the design stage, the design of the development of an encyclopedia book on the characteristics of the Orchidaceae family was carried out in Kampoeng Anggrek Kediri. The encyclopedia book contains a foreword, translations of verses of the Qur'an, table of contents, profiles of Kampoeng Anggrek Kediri, conditions for growing orchid plants, abiotic factors, taxonomy and material characteristics of orchid plants found in Kampoeng Anggrek Kediri, list of references, glossary, and author

profile. The encyclopedia book is also equipped with personal pictures from field and laboratory research.

BookencyclopediaIt consists of 37 pages printed using A4 sized Art Paper (21 cm x 29.7 cm) based on ISO standards. The following is a picture of the front cover, back cover, and contents page of the encyclopedia book.

(a) (b)

Figure 2. (a) Front cover page of the encyclopedia book, (b) Back cover page of the encyclopedia book (source: personal document)

Figure 3. The contents of the encyclopedia book (source: personal document)

Development

The development stage is the production stage to realize the development plan that has been made in the design stage into a real form (Wiyani, 2014). At this development stage, validation of the encyclopedia book was carried out by material experts, media experts, and lecturers of Plant Anatomy and Morphology courses. Validation was carried out aiming to determine the feasibility of the encyclopedia book that has been developed. Validation by material experts related to the suitability of the contents and material of the encyclopedia book obtained a result of 77.17%, which means that the encyclopedia book is suitable for use, but there is little revision or input from material experts. The validation of media experts regarding the design and components of the encyclopedia book obtained a percentage of 88%, which means it is feasible to use but there is little input from media experts for revision.

This encyclopedia book on Morphological Characteristics of the Orchidaceae Family has the advantages that it is based on appearance, attractive design, has pictures that contain facts, is neatly bound, contains a glossary, contains 144 lists of references, discusses material that is easy to understand, is arranged systematically and attracts interest in learning. According to the Big Indonesian Dictionary (KBBI),

an encyclopedia is a book or series of books that collects information or descriptions of various matters in the arts and sciences (Dede: 2017). The function of the encyclopedia, according to Maryono, is to present knowledge, information and documentation so that it is easy to understand (Maryono, et al).

Implementation

After validation, the next step is implementation. At this stage the products that have been validated by experts will be tested on the parties concerned, namely Tadris Biology students. The purpose of this trial was to find out student responses to the quality and use of encyclopedia books. The data obtained from this trial is then used in the evaluation stage. The field test phase carried out in this study only reached the limited field test This was carried out by distributing online questionnaires to 10 Tadris Biology students who had taken the Plant Anatomy and Morphology course and from the distribution of the questionnaires obtained an average percentage score of 85.34%, which means that encyclopedia books are suitable for use as a learning resource in Anatomy and Plant Morphology.

Evaluation

The evaluation stage is a stage for measuring the quality of learning outcomes, namely the process before and after the implementation of activities (Tung, 2017). Evaluation is carried out throughout the stages of ADDIE development. The results of the products that have been tested by material experts, media experts, lecturers in the Plant Anatomy and Morphology course are then revised in accordance with input and suggestions from experts and lecturers. Suggestions and results of revisions to encyclopedia books from experts and lecturers are as follows:

1. Material Expert Suggestions and Revisions

a. The verses of the Qur'an are not in accordance with the discussion

The verse of the Qur'an before the revision was QS Al-An'am verse 99, because according to the validator the verse was not in accordance with the discussion, after the revision it was changed to QS Al-An'am verse 141.

(a) (b)

Figure 4. (a) Verses of the Koran before, (b) Verses of the Koran after revision

b. Improvements on the topic of Orchid Plants (Orchidaceae)

The sentence used for topic writing, before the revision was only the word "Orchid Plants (Orchidaceae)". After the revision, it was changed to "Orchidaceae at a Glance", to make it look more attractive.

(a) (b)

Figure 5. (a) Writing topics before revision, (b) Writing topics after revision

c. Improvements to the conditions for growing orchid plants are made specifically or generally

The sentence used for topic writing, before the revision was only the word "Media Planting Orchid (Orchidaceae)". After the revision it was changed to "Orchidaceae Planting Media in Kampoeng Orchid Kediri". It was replaced like that because it was adjusted to the title of the encyclopedia book, specifically in Kampoeng Anggrek Kediri.

(a) (b)

Figure 6. (a) Topic editorial selection before revision, (b) Topic editorial selection after revision

2. Suggestions and Revisions of Lecturers of Plant Anatomy and Morphology Courses.

a. Giving the word "Morphology" in each title to clarify the discussion

The sentence used for topic writing, before the revision was only the word "Brassavola nodosa (L.) Lindl". After revision it was changed to "Morphology of Brassavola nodosa (L.) Lindl". Replaced so because to clarify what material will be discussed.

(a) (b)

Figure 7. (a) Writing before revision, (b) Writing after revision

CONCLUSION AND RECOMENDATION

The Orchidaceae family is a plant that can live both terrestrial and epiphytic. This plant has a type of attached roots and aerial roots. Orchids have roots that are cylindrical and fleshy. Orchid stems are divided into two types, namely simpodial and monopodial. Monopodial orchids have a main stem with unlimited straight up growth. Sympodial orchid stems have limited stem tip growth. Orchid leaf shape consists of various shapes, narrow elongated, elliptical, ovoid (oval), oval and spoon (spatula). Orchids have many similarities, including that the flowers are included in the flower tent (perigonium) because they cannot be clearly distinguished between the petals and the corolla, both in shape and color. Gathering pollen on orchids both have a yellow color, it's just that they have different shapes, namely round and oval. Overall, orchid plants have a lot in common. Starting from the roots, stems, leaf shapes, and the characteristics of the flowers.

Results The learning source of the encyclopedia book on morphological identification of the Orchidaceae family was declared suitable for use as learning material by students, both seen from the feasibility of experts, course supervisors, and responses from Tadris Biology students. It was proven based on the results of the due diligence by experts who were in the category suitable for use, namely material experts had an average percentage of 77.17%, media experts had an average percentage of 88%, and for supervising lecturers had an average percentage of 83.65%. The student implementation test obtained an average percentage score of 85.34%. Thus it can be concluded that the developed Encyclopedia book has a proper quality to be used as a learning resource

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ATTACHMENT

Appendix 1. Table of Observations on Orchid Morphology

No.	**Characterization**	**Species**										
		Brassavola nodosa(L). Lindl	*Phalaenopsis fimbriata*, JJSM.	*Ratchaburi beauty*, P Rodsawad.	*Dendrobium, Sp.*	*Dendrobium, Sp.*	*Dendrobium, Sp.*	*Dendrobium, Sp.*	*Dendrobium, Sp.*	*Vanda douglas*	*Dendrobium, Sp.*	*Dendrobium, Sp.*
1	root type	Sticky roots	Aerial roots	Aerial roots	Aerial roots	Aerial roots	Sticky roots	Sticky roots	Sticky roots	Aerial roots	Sticky roots	Sticky roots
2	Root color	Silvery white	Silvery white	Silvery white	Silvery green-white	Green	Green	Silvery green-white	White green	Silvery white	Green	Green
3	rod type	Wet	Wet	Wet	Wet	Wet	Wet	Wet	Wet	Wet	Wet	Wet
4	Growing direction	Perpendicular	Perpendicular	Perpendicular	Perpendicular	Perpendicular	Perpendicular	Perpendicular	Perpendicular	Perpendicular	Perpendicular	Perpendicular
5	Stem shape	Round	Round	Round	Round	Round	Round	Round	Round	Round	Round	Round
6	branching type	Simpodial	Monopodial	Monopodial	Monopodial	Monopodial	Simpodial	Simpodial	Simpodial	Monopodial	Simpodial	Simpodial
7	Stem surface	Slippery	Slippery	Slippery	Slippery	Slippery	Slippery	Slippery	Slippery	Slippery	Slippery	Slippery
8	Stem color	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
9	Stem height	± 3 cm	± 3 cm	± 16cm	± 40 cm	± 40 cm	± 60cm	± 50 cm	± 50 cm	± 65cm	± 50 cm	± 60cm
10	Leaves	Sitting leaves	Sitting leaves	Sitting leaves	Sitting leaves	Sitting leaves	Sitting leaves	Sitting leaves	Sitting leaves	Sitting leaves	Sitting leaves	Sitting leaves
11	Leaf layout	Alternate	Alternate	Alternate	Alternate	Alternate	Alternate	Alternate	Alternate	Alternate	Alternate	Alternate
12	Support leaf	-	-	-	-	-	-	-	-	-	-	-
13	Compound/single leaves	Single leaf	Single leaf	Single leaf	Single leaf	Single leaf	Single leaf	Single leaf	Single leaf	Single leaf	Single leaf	Single leaf
14	Leaf shape	Cylindrical leaves	Spoon leaves	Chamfer leaves	Chamfer leaves	Chamfer leaves	Chamfer leaves	Chamfer leaves	Chamfer leaves	Cylindrical leaves	Chamfer leaves	Chamfer leaves
15	Sheet shape	Build a ribbon	elongated	Build a ribbon	Build a ribbon	Build a ribbon	Get up jorong	Get up jorong	Get up elongated	Wake up dabus	Get up elongated	Get up elongated

No.	**Characterization**	**Species**										
		Brassavola nodosa(L). Lindl	*Phalaenopsis fimbriata*, JJSM.	*Ratchaburi beauty*, P Rodsawad.	*Dendrobium, Sp.*	*Dendrobium , Sp.*	*Dendrobium, Sp.*	*Dendrobium, Sp.*	*Dendrobium, Sp.*	*Vanda douglas*	*Dendrobium, Sp.*	*Dendrobium , Sp.*
16	Leaf edge	Flat	Flat	Flat	Flat	Flat	Flat	Flat	Flat	-	Flat	Flat
17	Leaf base	rounded	rounded	rounded	rounded	rounded	rounded	rounded	rounded	rounded	rounded	rounded
18	Leaf tip	Pointed	Pointed	Pointed	Pointed	Pointed	Pointed	Pointed	Pointed	Pointed	Pointed	Pointed
19	Bone leaves	Parallel	Parallel	Parallel	Parallel	Parallel	Parallel	Parallel	Parallel	Parallel	Parallel	Parallel
20	Order	Reached the end	Reached the end	Reached the end	Reached the end	Reached the end	Reached the end	Reached the end	Reached the end	Reached the end	Reached the end	Reached the end
21	Leaf texture	fleshy	fleshy	fleshy	fleshy	fleshy	fleshy	fleshy	fleshy	fleshy	fleshy	fleshy
22	Leaf surface	Slippery	Slippery	Slippery	Slippery	Slippery	Slippery	Slippery	Slippery	Slippery	Slippery	Slippery
23	Leaf color	Green	Green	Green	Green	Green	Green	Green	Dark green	Green	Dark green	Dark green
24	Leaf length	± 13cm	± 16cm	± 20cm	± 19cm	± 15cm	± 11cm	± 12cm	± 13.5 cm	± 14cm	± 9 cm	± 10 cm
25	Leaf width	± 1 cm	± 7 cm	± 2.3cm	± 1.5cm	± 2 cm	± 5.5 cm	± 5 cm	± 4.5cm	± 1.5cm	± 3.5 cm	± 4.5cm
26	Flower accessories	Incomplete flower	Incomplete flower	Incomplete flower	Incomplete flower	Incomplete flower	Incomplete flower	Incomplete flower	Incomplete flower	Incomplete flower	Incomplete flower	Incomplete flower
27	Interest amount	Flowering profusely	Flowering profusely	Flowering profusely	Flowering profusely	Flowering profusely	Flowering profusely	Flowering profusely	Flowering profusely	Flowering profusely	Flowering profusely	Flowering profusely
28	Place flowers	In the leaf axils	In the leaf axils	In the leaf axils	In the leaf axils	In the leaf axils	At the end of the rod	At the end of the rod	At the end of the rod	In the leaf axils	At the end of the rod	At the end of the rod
29	Inflorescence type	Boundary compound	Boundary compound	Boundary compound	Boundary compound	Boundary compound	Boundary compound	Boundary compound	Boundary compound	Boundary compound	Boundary compound	Boundary compound
30	Bracht/no	No	No	No	No	No	No	No	No	No	No	No
31	Flower stalk / sitting	Stems	Stems	Stems	Stems	Stems	Stems	Stems	Stems	Stems	Stems	Stems
32	Flower Symmetry	Symmetry one	Symmetry one	Symmetry one	Symmetry one	Symmetry one	Symmetry one	Symmetry one	Symmetry one	Symmetry one	Symmetry one	Symmetry one
33	flower sex	Pansy flower	Pansy flower	Pansy flower	Pansy flower	Pansy flower	Pansy flower	Pansy flower	Pansy flower	Pansy flower	Pansy flower	Pansy flower

No.	**Characterization**	**Species**										
		Brassavola nodosa(L). Lindl	*Phalaenopsis fimbriata*, JJSM.	*Ratchaburi beauty*, P Rodsawad.	*Dendrobium, Sp.*	*Dendrobium, Sp.*	*Dendrobium, Sp.*	*Dendrobium, Sp.*	*Dendrobium, Sp.*	*Vanda douglas*	*Dendrobium, Sp.*	*Dendrobium, Sp.*
34	The position of the fruit	Hypogyn	Hypogyn	Hypogyn	Hypogyn	Hypogyn	Hypogyn	Hypogyn	Hypogyn	Hypogyn	Hypogyn	Hypogyn
35	Location of the placenta	Central	Central	Central	Central	Central	Central	Central	Central	Central	Central	Central
36	Flower base	Flat	Flat	Flat	Flat	Flat	Flat	Flat	Flat	Flat	Flat	Flat
37	Lip color	White	Violet	Yellow	Yellow	Violet	Purple	White-purple	Purple	Deep purple	Greenish yellow	Purplish red
38	Flower tent color	White	White	Yellow	Yellow	Violet	Purplish yellow	White-purple	Purplish yellow	Whitish purple	Greenish yellow	Purplish red
39	Number of flower tents	5	5	5	5	5	5	5	5	5	5	5
40	Number of stamens	1	1	1	1	1	1	1	1	1	1	1
41	Number of pistils	1	1	1	1	1	1	1	1	1	1	1
42	Flower formula	⚥↑P5A1G1	⚥↑P5A1G1	⚥↑P5A1G1	⚥↑P5A1G1	⚥↑P5A1G1	⚥↑P5A1G1	⚥↑P5A1G1	⚥↑P5A1G1	⚥↑P5A1G1	⚥↑P5A1G1	⚥↑P5A1G1
43	Flower diagrams