



Penanggung jawab : Program Studi Pendidikan Biologi

Ketua Prodi : Dr. Fauziah Harahap, M.Si

Sekretaris Prodi : Dr. Tumiur Gultom, SP., MP

Susunan Panitia Pelaksana :

Ketua : Lola Zeramenda Br Tarigan, S.Pd

Wakil Ketua : Gittha Indriani, S.Pd

Sekretaris : 1. Sariyani Kudadiri, S.Si
2. Uswatun Hasanah Harahap, S.Pd
3. Desy Ardina, S.Pd

Bendahara : Febrina Suci Ramadhoni, S.Pd

Seksi-seksi

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b. Konsumsi

Koordinator : Siti Hafiza Al Khairiyah Bintang, S.Pd
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Anggota : Damayani Panggabean, S.Pd

f. Acara

Koordinator : Tri Rahmatika, S.Pd
Anggota : Muliawati, S.Pd

g. Workshop

Koordinator : Armaya Sari, S.Pd

1. Pelatihan Pembuatan Media Untuk Biologi dan Pembelajaran Biologi :
Dewi Sri Lestari Sigalingging, S.Pd

2. PTK untuk Pembelajaran IPA :
Armaya Sari, S.Pd

3. Isolasi DNA/Karyotipe Kromosom :
Rani Asima Silean, S.Si

4. Manajemen Laboratorium :
Siti Hafizah Al Khairiyah Bintang, S.Pd

h. Temu Kangen Alumni

Koordinator : Rani Asima Silean, S.Si
Anggota : 1. Roberi Sepda Fian Sinaga, S.Si
2. Siti Mukhayyaroh, S.Pd

i. Lomba Media

Koordinator : Wulan Ramadhani Nasution, S.Pd
Anggota : Dewi Sri Lestari Sigalingging, S.Pd

j. Penanaman Pohon/Pengolahan Sampah

Koordinator : Dedi Anlo S., S.Pd
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PROSIDING

SEMINAR NASIONAL BIOLOGI DAN PEMBELAJARANNYA



**FOURTH
POSTGRADUATE
BIO EXPO 2019**

**SEMINAR NASIONAL
V, WORKSHOP
BIOLOGI DAN
PEMBELAJARANNYA**

PROSIDING

SEMINAR NASIONAL BIOLOGI DAN PEMBELAJARANNYA

**Inovasi Pembelajaran dan Penelitian Biologi Berbasis
Kearifan Lokal dalam Meraih Peluang Revolusi Industri 4.0**





Prosiding

Seminar Nasional Biologi dan Pembelajarannya

“Inovasi Pembelajaran dan Penelitian Biologi Berbasis Kearifan
Lokal dalam Meraih Peluang Revolusi Industri 4.0”



PROSIDING

Seminar Nasional Biologi Pembelajarannya

“Inovasi Pembelajaran dan Penelitian Biologi Berbasis Kearifan Lokal dalam Meraih Peluang Revolusi Industri 4.0”

Penyusun:

Program Studi Pendidikan Biologi Pascasarjana
Universitas Negeri Medan

Kantor Program Studi Pendidikan Biologi PPs Universitas Negeri Medan
Gedung Pascasarjana Lantai 4
Jalan Willem Iskandar, Pasar V Medan Estate
Kode Pos 20221, Sumatera Utara, Indonesia

Editor Ahli:

Dr. Fauziah Harahap, M.Si.
Dr. Tumiur Gultom, M.P.

Editor Pelaksana:

Lola Zeramenda br Tarigan, S.Pd
Damayani Panggabean, S.Pd
Muliawati, S.Pd
Dewi Sri Lestari Sigalingging, S.Pd
Uswatun Hasanah Harahap, S.Pd
Rotuanita Butar-Butar, S.Pd

Desain Sampul:

Uswatun Hasanah Harahap, S.Pd
Githa Indriani, S.Pd

Penerbit:

Universitas Negeri Medan
Jalan Willem Iskandar, Pasar V Medan Estate, Medan, Sumatera Utara
Jumlah : *xiii* + 517 halaman
Ukuran : 21 x 29 cm

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Kata Pengantar

Puji dan syukur kami panjatkan kepada Tuhan Yang Maha Esa, atas rahmat dan kasih-Nya panitia Seminar Nasional V Biologi dan Pembelajarannya (Fourth Postgraduate Biologi Expo 2019) dapat menyelesaikan penyusunan prosiding. Dalam prosiding ini terdapat 85 makalah yang telah disampaikan dalam kegiatan Seminar Nasional IV yang diselenggarakan pada tanggal 04 Oktober 2019 di Gedung Digital Library Universitas Negeri Medan. Seminar nasional tahun ini mengusung tema “Inovasi Pembelajaran dan Penelitian Biologi Berbasis Kearifan Lokal dalam Meraih Peluang Revolusi Industri 4.0”. Dari tema tersebut kami berharap agar Biologi sebagai ilmu dapat semakin maju dan berkembang untuk menjadi solusi dari permasalahan yang dihadapi masyarakat saat ini. Makalah utama disampaikan oleh Prof. Dr. Syawal Gultom, M.Pd, Prof. Dr. Dahelmi, M.Sc, dan Dr. Siti Sriyati, M.Si. Diselenggarakan pula penyampaian hasil kajian dan penelitian dalam bidang biologi dan pendidikan biologi yang dilakukan oleh peneliti, dosen, mahasiswa dan guru dari berbagai sekolah, perguruan tinggi dan lembaga penelitian lainnya dalam sidang paralel. Harapan kami, prosiding ini dapat membantu penyebaran hasil kajian dan penelitian dalam bidang pendidikan biologi dan biologi, sehingga dapat diakses lebih luas oleh masyarakat umum dan berguna untuk pembangunan bangsa.

April 2020

Tim Editor

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Sambutan Ketua Panitia Fourth Postgraduate Bio Expo 2019

Bismillahirrahmanirrahim

Assalamu'alaikum Warohmatullohi Wabarokatuhu

Selamat Pagi dan Salam Sejahtera.

Selamat datang dan selamat berjumpa kami ucapkan kepada para hadirin sekalian.

Segala puji dan syukur saya sampaikan kehadiran Allah Subhanahu wa Ta'ala, Tuhan yang Maha Esa, atas segala karunia yang diberikanNya kepada kita pada hari ini, sehingga kita dapat berkumpul di ruangan gedung Prof. Dr. Syawal Gultom, M.Pd. yang berbahagia ini, guna mengikuti “*Fourth Postgraduate Biology Expo 2019: Seminar Nasional V, Workshop Biologi dan Pembelajarannya*” Program Studi S2 Pendidikan Biologi Program Pascasarjana Universitas Negeri Medan.

Yang terhormat :

- Bapak Rektor Universitas Negeri Medan, Bapak Dr. Syamsul Gultom, S.KM. M.Kes beserta Bapak-Bapak Wakil Rektor, dan Ibu-Bapak Dekan di lingkungan Universitas Negeri Medan.

Yang saya hormati:

- Bapak Direktur Pacasarjana Universitas Negeri Medan, Bapak Prof. Dr. Bornok Sinaga, M.Pd. beserta Para Wakil Direktur dan Ketua Program Studi di lingkungan Program Pascasarjana Universitas Negeri Medan.

Yang saya hormati:

- Ibu Ketua Program Studi S2 Pendidikan Biologi Program Pascasarjana Universitas Negeri Medan, Ibu Dr. Fauziah Harahap, M.Si. dan Ibu Sekretaris Program Studi, Ibu Dr. Tumiur Gultom, MP.

Yang saya hormati:

- Ibu-Bapak *Keynote Speaker*:
 - Bapak Prof.Dr. Syawal Gultom, M.Pd., dari Universitas Negeri Medan;
 - Bapak Prof.Dr. Dahelmi, M.Sc., dari Universitas Andalas – Padang; dan
 - Ibu Dr. Siti Sriyati, M.Si., dari Universitas Pendidikan Indonesia – Bandung.
- Yang saya hormati:
 - Ibu-Bapak Dosen Program Studi S2 Pendidikan Biologi Program Pascasarjana Universitas Negeri Medan.
 - Ibu-Bapak Peserta “*Fourth Postgraduate Biology Expo 2019: Seminar Nasional V, Workshop Biologi dan Pembelajarannya*”.
 - Teman-teman Panitia dan Hadirin sekalian.

Izinkan saya melaporkan pelaksanaan kegiatan ini. Bahwa kegiatan “*Fourth Postgraduate Biology Expo 2019*” mengambil tema: “Inovasi Pembelajaran dan Penelitian Biologi Berbasis Kearifan Lokal dalam Meraih Peluang Revolusi Industri 4.0”. Pemilihan tema ini didasari pada pemikiran: (1) Bahwa, revolusi industri 4.0 disamping memberi dampak disrupsi (*disruption*) lapangan kerja dan sistem perekonomian dunia, yang digantikan dengan *artificial intelligence*, tetapi juga memberi dampak kelimpahan (*abundance*) lapangan kerja baru yang belum pernah ada sebelumnya; (2) Bahwa, berbagai permasalahan yang muncul akibat divergensi globalisasi saat ini hanya dapat dipecahkan melalui ilmu pengetahuan; (3) Bahwa, kinerja penelitian biologi berbasis kearifan lokal, akan berkontribusi pada penyediaan “*big data*” yang akan digunakan dalam melakukan inovasi pembelajaran biologi berorientasi kebutuhan belajar abad 21, berpikir tingkat tinggi (*high order thinking*), dan berbasis *internet of things*, untuk meraih berbagai peluang di era revolusi industri 4.0.

Kegiatan “*Fourth Postgraduate Biology Expo 2019*” bertujuan: (1) Meningkatkan peran ilmu biologi dan pembelajaran biologi dalam upaya meningkatkan kualitas sumber daya manusia dalam menghadapi Revolusi Industri 4.0; (2)

Mengkomunikasikan dan mendiskusikan hasil-hasil penelitian terkait biologi dan pembelajaran biologi dengan sesama peneliti dan pendidik maupun kepada pemangku kepentingan lainnya; (3) Memfasilitasi komunikasi, diskusi dan pelatihan terkait permasalahan, peluang dan kemajuan aktual biologi dan pembelajaran biologi dalam menghadapi Revolusi Industri 4.0.;

Tujuan tersebut akan dicapai melalui serangkaian kegiatan, yakni: (1) Seminar Nasional (Biologi dan Pembelajaran Biologi), yang dilaksanakan hari ini, Jum'at, 4 Oktober 2019. Dilanjutkan dengan kegiatan (2) Workshop; Pelatihan Pembuatan Media untuk Pembelajaran Biologi & IPA, Manajemen Laboratorium Strategi Penyusunan dan Pelaporan Penelitian Tindakan Kelas, serta Pelatihan Isolasi DNA/ Karyotipe Kromosom untuk Guru dan Umum (dilaksanakan pada hari Sabtu, 5 Oktober 2019); (3) Lomba pembuatan media pembelajaran biologi ICT dan Non-ICT (dilaksanakan hari Kamis, tanggal 10 Oktober 2019 dan (4) Pelatihan Manajemen Laboratorium Biologi Unimed (dilaksanakan pada hari Sabtu, tanggal 02 November 2019).

Khusus kegiatan seminar hari ini dihadiri sebanyak 95 peserta sekaligus pemakalah, dan 75 orang peserta seminar yang berasal dari dosen, guru-guru, mahasiswa dan masyarakat luas. Dihadapan kita telah hadir ibu-bapak *keynote speaker* yang berasal dari Universitas Negeri Medan, Universitas Andalas, dan Universitas Pendidikan Indonesia. Suatu keberkahan dan rahmat bagi kita semua mendapatkan pencerahan ilmu pengetahuan dari ibu-bapak keynote speaker dalam wadah seminar nasional yang kita laksanakan pada hari ini.

Terimakasih kami sampaikan kepada Rektor, Direktur Program Pascasarjana, Ketua Program Studi S2 Pendidikan Biologi, para Dosen, pegawai, rekan-rekan mahasiswa Program Studi S2 Pendidikan Biologi Unimed, dan seluruh sivitas akademika Unimed yang telah mendukung terselenggaranya kegiatan ini. Semoga kegiatan ini mendapat Ridho Allah Subhanahu wa Ta'ala, Tuhan Yang Maha Esa, sehingga memberikan manfaat bagi pengayaan khasanah Ilmu Pengetahuan, khususnya di bidang Biologi dan Pembelajarannya, dan bermanfaat bagi peningkatan daya saing bangsa.

Demikian laporan ini saya sampaikan, terimakasih atas kehadiran Ibu-Bapak para hadirin sekalian, dan atas segala kekurangan dari pelayanan kami panitia PBXPO V Tahun 2019 kepada Ibu-Bapak hadirin sekalian kami mohon maaf yang sedalamnya. Sudi kiranya Bapak Rektor Unimed, Bapak Dr. Syamsul Gultom, M.Kes. membuka dan merestui kegiatan ini.

Salam silaturahmi dari kami panitia PBXPO V Program S2 Pendidikan Biologi Program Pascasarjana Unimed kepada kita semua.

Billahi taufik wal hidayah, Assalamu'alaikum Warohmatullohi Wabarokatuhu.

Selamat Pagi dan Salam Sejahtera.

Medan, 4 Oktober 2019

Ketua Pelaksana,

Lola Zeramenda Tarigan, S.Pd
Mahasiswa Program S2 Pendidikan
Biologi
Program Pascasarjana Universitas
Negeri Medan

Sambutan Ketua Prodi Pendidikan Biologi PPs Universitas Negeri Medan

Bismillahirrahmanirrahim.
Assalamualaikum Wr. Wb.

Yth Bapak Rektor Unimed beserta jajarannya, Bapak Direktur Pascasarjana Unimed beserta jajarannya, Bapak/Ibu Ketua dan Sekretaris Prodi di Lingkungan Pascasarjana Unimed, Panitia dan Peserta Seminar: “Fourth Postgraduate Bio Expo 2019 Seminar Nasional V dan Workshop Biologi dan Pembelajarannya”.

Suatu kehormatan bagi kami atas kehadiran Bapak/Ibu seluruhnya di Gedung Prof. Syawal Gultom, M.Pd ini, untuk bersama-sama mengikuti seminar ini. Kegiatan seminar ini merupakan rangkaian kegiatan dari Acara “Fourth Postgraduate Bio Expo 2019” Seminar Nasional V dan Workshop Biologi dan Pembelajarannya”. Selain kegiatan seminar, kegiatan PBXPO ini juga esok hari akan dilanjutkan dengan workshop: Isolasi DNA/Karyotipe Kromosom, Pelatihan Pembuatan Media Untuk Biologi Dan Pembelajaran Biologi, serta dilanjutkan dengan Lomba Pembelajaran Media Biologi Berbasis ICT dan Non-ICT, dan Pelatihan Manajemen Laboratorium Biologi.

Seminar ini sangat penting karena berhubungan langsung dengan pengembangan pengetahuan, keterampilan dan sikap kita dalam menjalankan profesi kita, juga merupakan wahana atau tempat berkumpulnya para ilmuwan Biologi dan Pendidikan Biologi, sehingga dapat menggali, berdiskusi lebih jauh tentang Biologi sebagai ilmu dasar, aplikasinya dan bagaimana membelajarkannya dalam tugas keseharian kita.

Pada kesempatan ini saya mengucapkan terimakasih kepada Rektor Unimed baik sebagai nara sumber maupun sebagai pimpinan beserta jajarannya yang telah memberikan fasilitas untuk terlaksananya acara ini, terimakasih kepada Direktur Pascasarjana beserta jajarannya, seluruh keynote speaker pada seminar, fasilitator workshop, rekan sejawat serta seluruh panitia yang telah bekerja keras untuk terlaksananya acara ini. Kegiatan seminar dan workshop ini juga melibatkan alumni S2 Pendidikan Biologi sebagai Moderator dalam seminar paralel maupun workshop. Prodi mengucapkan Terimakasih banyak atas sumbangsiah ini.

Harapannya Tema “Inovasi Pembelajaran dan Penelitian Biologi Berbasis Kearifan Lokal dalam Meraih Peluang Revolusi Industri 4.0” dapat kita implementasikan dalam tugas keseharian dan aktivitas kita, sehingga melalui kegiatan ini kita dapat melaksanakan Visi dan Misi Unimed dengan membangun Atmosfer Akademik yang lebih kondusif.

Selamat melaksanakan seminar, workshop, lomba pembelajaran media biologi, penanaman pohon/pengolahan sampah dan pelatihan manajemen laboratorium Biologi. Semoga Allah SWT membalas semua jerih payah Bapak Ibu semua. Wassalamualaikum Wr. Wb.

Medan, 4 Oktober 2019
Ketua Prodi Pendidikan
Biologi PPs Unimed

Dr. Fauziyah Harahap, M.Si

Sambutan Direktur Pascasarjana Universitas Negeri Medan

Salam sejahtera untuk kita semua.

Puji dan syukur kita panjatkan pada Tuhan Yang Maha Kuasa karena berkat rahmat dan karunianya kita dapat hadir di tempat ini untuk mengikuti kegiatan “Seminar Nasional V dan Workshop Biologi dan Pembelajarannya” yang diselenggarakan oleh Program Studi Magister Pendidikan Biologi Pascasarjana Universitas Negeri Medan. Kami mengucapkan Selamat Datang kepada para nara sumber (*keynote speaker*), seluruh peserta seminar, workshop dan pelatihan serta hadirin sekalian.

Seminar Nasional ini merupakan salah satu bentuk perwujudan dari visi-misi Program Pascasarjana (PPs) Unimed, yakni melakukan diseminasi dan implementasi hasil penelitian dan kajian kepada masyarakat terkait. Oleh karena itu kami sangat mendukung kegiatan seminar nasional ini yang juga merupakan rangkaian dari kegiatan besar *Fourth Postgraduate Bio Expo 2019*. Melalui seminar nasional ini para peserta akan saling bertukar informasi terkait riset terbaru dalam bidang ilmu Biologi maupun bidang pembelajaran inovatif. Sehingga diharapkan dapat memunculkan ide-ide baru dalam menyelesaikan berbagai persoalan yang muncul khususnya dalam dunia Pendidikan Biologi itu sendiri.

Salah satu tantangan dimasa mendatang adalah tercapainya Unimed menjadi *the world class university*. Untuk mewujudkan capaian tersebut Program Pascasarjana Unimed terus meningkatkan atmosfer yang sehat dan dinamis, mampu memberi pelayanan pendidikan berkualitas, mendorong kegiatan penelitian dan publikasi ilmiah yang melibatkan mahasiswa serta melakukan kerjasama dengan *stakeholder* di tingkat nasional, regional maupun internasional.

Dalam kesempatan ini saya mengucapkan terimakasih kepada Ibu Dr. Fauziyah Harahap, M.Si, Ibu Dr. Tumiur Gultom, M.P selaku Ketua Dan Sekretaris Program Studi Magister Pendidikan Biologi Unimed yang telah menginisiasi kegiatan ini. Terimakasih juga disampaikan untuk semua panitia dan seluruh mahasiswa yang telah bekerja keras sehingga kegiatan ini dapat diselenggarakan dengan baik. Terimakasih juga disampaikan kepada pembicara kunci (*keynote speaker*) yang telah hadir pada hari ini. Kepada seluruh pemakalah, mudah-mudahan seminar nasional ini dapat menjadi ajang diskusi ilmiah untuk perkembangan ilmu Biologi ke depan.

Akhir kata, saya berharap agar seluruh Civitas Akademika dan pihak *stakeholder* Program Studi Magister Pendidikan Biologi PPs Unimed bergerak bersama untuk memajukan Institusi ini hingga mencapai Universitas kelas dunia. Terimakasih dan salam sejahtera bagi kita semua.

Medan, 4 Oktober 2019
Direktur Pascasarjan Universitas
Negeri Medan

Prof. Dr. Bornok Sinaga, M.Pd



APLIKASI PENDEKATAN ILMIAH DALAM KEGIATAN BELAJAR SISWA PADA TOPIK SISTEM REPRODUKTIF MANUSIA

APPLICATION OF A SCIENTIFIC APPROACH IN STUDENTS' LEARNING ACTIVITY ON HUMAN REPRODUCTIVE SYSTEM TOPIC

FebrinaSuci Ramadhoni¹, Elly Djulia²

*Master Class of Biology Education Study Program
State University of Medan¹*

Email. febrinasuci.fs@gmail.com

*Master Class of Biology Education Study Program
State University of Medan²*

ABSTRACT

This study aims to determine the implementation of biological learning based on scientific approach, learning activities based on scientific learning, activities that are dominant in the application of scientific approaches, and stages of scientific learning which are problems in biology learning at SMAN 16 Medan T.P.2018 / 2019. The research design used was a descriptive study based on qualitative data, using a survey method. The samples taken were 2 biology teachers and 115 students. Data collection techniques using, observation sheets, student questionnaires, and in-depth interview. The results of the analysis show that the application of learning with a scientific approach is 68% with the medium qualification. While the activities of the stages of learning are 59%, 67%, 63%, 60%, 70%, with an average that is low. The dominant stages of scientific learning are communicate, and the stages of scientific learning which are problems in learning, namely observing, associating, questioning, and collecting data.

Keywords : *Curriculum 2013, Scientific Approach, Human Excretion System*

ABSTRAK

Penelitian ini bertujuan untuk mengetahui implementasi pembelajaran biologi berdasarkan pendekatan saintifik, kegiatan pembelajaran berbasis saintifik, kegiatan yang dominan dalam penerapan pendekatan saintifik, dan tahapan pembelajaran saintifik yang merupakan masalah dalam pembelajaran biologi di SMAN 16 Medan TP2018 / 2019. Desain penelitian yang digunakan adalah penelitian deskriptif berdasarkan data kualitatif, menggunakan metode survei. Sampel yang diambil adalah 2 guru biologi dan 115 siswa. Teknik pengumpulan data menggunakan, lembar observasi, angket siswa, dan wawancara mendalam. Hasil analisis menunjukkan bahwa penerapan pembelajaran dengan pendekatan ilmiah adalah 68% dengan kualifikasi sedang. Sedangkan kegiatan tahapan pembelajaran adalah 59%, 67%, 63%, 60%, 70%, dengan rata-rata yang rendah. Tahap dominan pembelajaran saintifik adalah berkomunikasi, dan tahapan pembelajaran saintifik yang merupakan masalah dalam pembelajaran, yaitu mengamati, mengasosiasikan, mempertanyakan, dan mengumpulkan data.

Kata kunci: *Kurikulum 2013, Pendekatan Ilmiah, Sistem Ekskresi Manusia*

1. Introduction

The government again made improvements to the curriculum which was marked by the formation of the Curriculum 2013 in the process of facing an increasing era of globalization. The scientific learning process in Curriculum 2013 is a combination of learning processes that were initially focused on exploration, elaboration, and confirmation now complemented by conducting 5M activities, namely observing, asking, reasoning, trying, and communicating (Minister of Education, 2013). The "5M" approach emphasizes that the main role in learning activities is the activity of students



in constructing their own knowledge. Everything such as materials, media, equipment, environment and other facilities is provided to assist the establishment. The role of the teacher according to John W Santrock (in Fauzi,2014) success and achievement can be achieved from a process that gives enthusiasm, direction and persistence of behavior, meaning motivated behavior is a behavior that is full of energy, directed and long-lasting to achieve a goal. it was concluded that the "5M" approach is a perspective in learning that provides opportunities for students to learn spiritually through activities; observe, ask, gather information / experiments; associate / process information; and communicate through student activities and learning experiences.

The learning process in Curriculum 2013 for all levels is carried out using a scientific (scientific) approach. The steps of the scientific approach (scientific approach) in the learning process include digging information through observation, asking questions, experimenting, then processing data or information, presenting data or information, followed by analyzing, reasoning, then concluding, and creating. For certain subjects, materials, or situations, it is very possible that this scientific approach is not always appropriately applied procedurally. In conditions like this, of course the learning process must continue to apply values or scientific traits and avoid values or non-scientific traits.

Fitting inspiration will cultivate a solid will in understudy learning. This condition ought to be combined with the utilization of fitting adapting as well; logical methodology is one of methodology that is relied upon to develop understudies' learning inspiration. Since the learning structure is based on the stream of logical reasoning, for example, building ideas, laws and standards through the phases of recognizing issues, detailing issues, planning theories, gathering information with different methods, investigating information, making determinations and imparting ideas, speculations, laws, and rules that have been gotten.(Wahyono,2017)

The exercise ought to be structured utilizing process abilities, where educators ought to have the capacity to, 1) watch the exercises of the understudies; 2) asking some protest identified with the topic; 3) thinking a progression of exercises embraced by understudies; 4) endeavor to accomplish something to realize information; and 5) organizing in associating existing learning and exercises to make fascinating (Wahyono,2017). Getting the hang of utilizing a logical methodology gives a positive effect on instructors and understudies, since its learning alludes to a logical reasoning procedure that trains methodical and all encompassing considering. Since it isn't just considers figuring out how to be an estuary however further forms the interconnectedness of learning reflected in the process aptitudes, to investigate and expand the topic, what's more it gives the most stretched out conceivable chance to educators to investigate understudies' learning as indicated by their capacities and necessities.

In the scientific approach the problem given by the teacher is always based on the phenomena that have occurred in the lives of students, then students try to find answers to problems that are given independently so students do not only know facts or principles, but must be skilled in applying knowledge in life. The use of scientific approaches is intended to make the learning process better. However, if the scientific approach is used solely because of the demands of the 2013 curriculum, it will lose the essence of the scientific approach and in practice the teacher is difficult to apply in classroom learning (Budiyanto, 2016).



Research results of (Mustofa,2015 in Rahmatika,028-035) say that teachers' understanding of the 2013 curriculum, especially in learning with a scientific approach is not sufficient, teachers still apply conceptual learning and have not optimal in applying the scientific approach and the teacher still requires the same perception of scientific learning. Based on the description above, it is necessary to further study the mapping of biological learning based on the scientific approach. The research objective was to find out the implementation of learning based on scientific approaches carried out during biology learning, learning activities based on scientific learning, activities from the stages of dominant scientific learning carried out during biology learning, the stages of learning from scientific approaches which are problems in biology learning.

2. Research Design

This research is a descriptive study based on qualitative data, using a survey method from students of grade XII SMAN 16 Medan, on December 3, 2018. The population of the study was all Biology teachers (2 people) and all student of XII MIA (115 correspondents). The survey was conducted with observation and interview techniques. Observations were carried out indirectly using a questionnaire to all students of class XII SMAN 16 Medan T.P 2018/2019 as many as 115 people, followed by in-depth interviews of 20 students and 2 Biology teachers who taught in class XI using interview guidelines.

Data from research results obtained using questionnaires were analyzed with descriptive statistics: 1) Comparison of the value of the implementation of learning in opening activities, core activities, and assessment and closing activities; 2) Comparison of the value of application biology learning with a scientific approach (observing, asking, reasoning, associating, and communicating); 3) Comparison of individual student scores on the application of the scientific approach to learning Reproductive System biology. The results of in-depth interviews with students were analyzed by narrative techniques covering aspects: 1) Application of scientific approaches to biology learning; 2) Obstacles or difficulties in learning Reproductive Systems use a scientific approach; 3) Learning resources used. Interviews with class XII biology subject teachers were also analyzed by narrative technique covering the same aspects as in-depth interviews with students coupled with the constraints of scientific application to biology learning.

3. Research Findings

Based on the results of research on the application of scientific approaches in class X of SMAN 16 Medan, curriculum 2013 uses a scientific approach that is applied in the core activities of learning, asking questions, gathering information, associating, and communicating. The following are the results of the stages of scientific learning that have been carried out in biology learning.

Table 1: The Result of Scientific Learning

NO	Scientific Learning	Average of questionnaire	Qualification
1	Opening Activities	69	Medium



2	core activities (during learning takes place)	64	Low
3	Observing (M1)	59	Low
4	Questioning (M2)	67	Medium
5	Reasoning / Collecting Data (M3)	63	Low
6	Try / Associating (M4)	60	Low
7	Communicating (M5)	70	Medium
8	Closing activities (Process Assessment and Learning Outcomes)	92	High
Averages		68	Medium

Table 2 :Conversion 1

Scale	Qualification
81-100	High
66-80	Medium
51-65	Low
50	Very low

The assessment refers to book 2 Teacher work guidance (PKG) (Wahyono,2017).

Based on Table 1, it can be concluded that the learning of biology in SMAN 16 Medan with a scientific approach is Medium. The results of the analysis of learning activities from the stages of scientific learning conducted during biology learning can be seen in Figure 1.

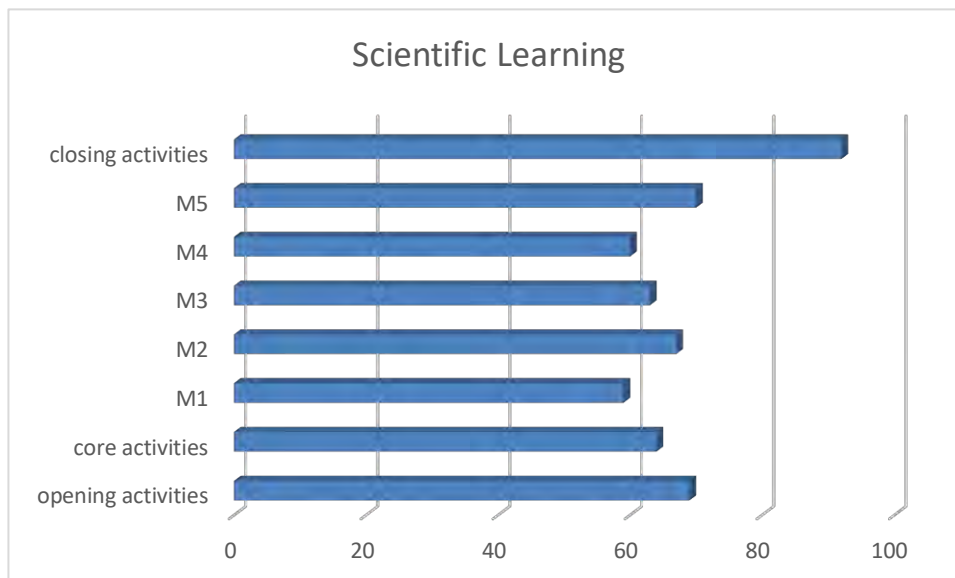


Figure 1. Application of Scientific Learning
 From Figure 1. it is known



that the Scientific Approach (5M) is the activity observes (M1) 59%, questioning (M2) 67%, tries / collects information (M3) 63%, associates / reason (M4) 60%, communicates (M5) 70%. The most dominant stage in applying the scientific approach is M5 (Medium).

Based on Figure 1, it can be seen that the stages of scientific learning which are problem are asking questions and gathering information. There are several problems during the learning process, including: (1) The teacher stimulates students to ask questions by asking students. (2) Students lack confidence in asking questions and not all students actively ask, in each class generally five to seven students. (3) Students are more actively involved in answering questions than students who ask. (4) Students collect data from student / internet books, as well as explanations from the teacher. (5) The teacher does not provide a student activity sheet (LKS) because the student activity sheet is not provided, and is not found in the lesson plan.

4. Discussion

Opening activities are the initial activities in the learning process that must be carried out to create an effective learning atmosphere. The activities that tend to be carried out by the teacher are preparing the physical and psychological students and linking the material with the previous learning material so that students are better prepared to learn, according to opinions (Sanjaya, 2011 in Rahmatika, 2013), preconditions for students so that mentality and attention are centered on things to be learned so that they will easily reach the expected competencies. The activities that are less implemented are activities demonstrating, activities conveying the benefits of learning material, and the teacher does not always convey the abilities that students will achieve.

The non-implementation of activities is caused by the delivery of material benefits or abilities that will be achieved by the students, only delivered by the teacher in the new material at the beginning of the learning for the next meeting which tends to not be delivered. According to (Sanjaya, 2011 in Rahmatika, 2013) clarifying students 'understanding of learning goals can foster students' interest in learning which in turn can increase student learning motivation.

The core activities that have been carried out by using a scientific approach are the stages of observing, asking, collecting data, associating, and communicating.

Aspects discussed in the questionnaire (M1), including:

- a) I have a discussion group based on human reproductive system material
- b) My discussion group is a media picture of the structure of human reproduction and male reproductive instruments that we have prepared from home
- c) I express opinions in groups about the organs that play a role in the reproductive system
- d) My biology teacher encouraged me to dare to express opinions within the group about the images we observed
- e) My biology teacher opened my horizons of thinking about the material of the human reproductive system in accordance with real events or events in the surrounding environment such as events of pregnancy, sexually transmitted diseases, and multiple pregnancy events

In this learning stages, the average of at the level of learning M1 from this scientific approach it was found that the average score obtained by students was lowest among other learning steps. this can be caused because when the teacher starts core activities,



the teacher does not provide stimulation to start learning in accordance with the applicable rules.

Aspects discussed in the questionnaire (M2), including:

- a) Male and female students are separated in different rooms, male students are guided by male teachers to observe the structure and function of male reproductive organs displayed in power point presentation slides, female students are guided by female teacher to observe the structure and function of reproductive organs the woman displayed in the power point presentation slide
- b) I am looking for information about the material that you have searched for in the literature
- c) I am able to answer questions with human material functions, for example, "what are the roles of organs in the reproductive system?"
- d) Students ask questions related to humans, such as "from different bodies.
- e) I compose questions that I don't understand, for example like "WHAT DOES GET OUT TO GOLD AND CHILDREN?"
- f) They expressed a statement they did not understand, such as "what are the gender features of women and men?"

In this learning stages, the average of at the level of learning M2 from this scientific approach it was found that the average score obtained by students was quite high because students were still able to follow the learning quite well, without any other problems.

Aspects discussed in the questionnaire (M3), including:

- a) In group discussion, I conducted an investigation by collecting data from all the observations we had made. Identify, for example, physical differences in women who are pregnant (pregnant) with women who are not pregnant, single pregnancy events with twin pregnancies
- b) My biology teacher guides in general every learning activity in my discussion group, which is in conducting literature studies as a support for our investigation
- c) I give a brief explanation of the things we have investigated that we have proven with the literature that we have prepared in advance

In this learning stages, the average of at the level of learning M3 from this scientific approach it was found that the average score obtained by students was quite low because students were still don't have feel in the learning process and students didn't know how to following the learning activities because the teacher didn't tell the advance of the learning.

Aspects discussed in the questionnaire (M4), including:

- a) I worked on LKPD on Human Reproductive System material
- b) Students read reliable sources or literature regarding the reproduction of human reproductive systems
- c) In group discussions, I did a discussion in making a simple report that we had done

In this learning stages, the average of at the level of learning M4 from this scientific approach it was found that the average score obtained by students was quite low because students were still don't have feel in the learning process and students didn't know how to following the learning activities because the teacher didn't tell the advance of the learning.

Aspects discussed in the questionnaire (M5), including:

- a) I dare to answer the learning objectives that will be learned



- b) I presented the results we obtained from group discussions, the results of simple posters or brochures that contained invitations to Adolescent Reproductive Health or about calls for Anti Free Sex
- c) I get the appreciation of the work results of each discussion group activity
- d) My biology teacher provides corrections to the work results of each student discussion group in general
- e) My biology teacher provides reinforcement of the material we have learned about human reproduction systems

In this learning stages, the average of at the level of learning M5 from this scientific approach it was found that the average score obtained by students was the highest from the other learning stages.

5. Conclusion

The results of the analysis show that the application of learning with a scientific approach is 68% with the medium qualification. While the activities of the stages of learning are 59%, 67%, 63%, 60%, 70%, with an average that is low. The dominant stages of scientific learning are communicate, and the stages of scientific learning which are problems in learning, namely observing, associating, questioning, and collecting data.

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