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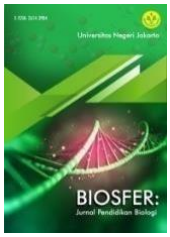

Analysis of high school student's mental model on fungi: Representation of students' conceptions

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ABSTRACT

Learning biology requires complete knowledge in understanding it, as well as in fungi. Lack of understanding of a concept, difficulty in finding relationships between concepts, and lack of teachers' understanding are the main causes of misconceptions which can be represented through mental models. This study aims to analyze students' mental models of fungi through drawing and writing tests (DW), concept maps, interviews, and questionnaires. Using descriptive analysis, researchers use qualitative analysis and interpretation to support the quantitative results. A total of 30 students of grade 10 were given a test. The results showed that the level of students' mental models on the fungi structure was at the level of D3 W3 (46.43%) or wrong/irrelevant answers and fungi reproductive was the level of D3 W2 (17.85%) or partially correct drawing and irrelevant writing. On concept maps, as many as 60.71% of students were at emergent level and the other students were at the transitional level. Most of the answers in the interviews showed agreement with the results shown in the quantitative tests, while the questionnaires indicated the learning experiences and difficulties that students encountered in learning the functions. The conclusion of this study shows that the mental model of students on fungi is still not close to the mental model of experts.

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INTRODUCTION

Biology learning is related to complex phenomena and detailed structures so that complete knowledge is needed to understand them. Lack of understanding of a concept, difficulty in finding relationships between concepts, limited formal and informal learning experiences, and teachers' lack of understanding of certain concepts are the main causes of misconceptions in students (Cakir & Crawford, 2001) which can be analyzed through mental models. Mental model is a representation in memory of information that has been obtained which consists of pieces of information (knowledge) that are interconnected (Michael, 2004). Mental models are based on interpretations of scientific understanding and intuition (Young & Veen, 2008). This mental model has individual and unique characteristics so that it can describe the representation of students' conceptions and can evaluate students' misconceptions.

In this study, the mental model of the students studied was compared with the mental model of the expert. This expert mental model becomes the highest-level reference in experience and becomes the standard for responses given by students (Jee et al., 2015). There are several mental model analysis techniques that have been developed, including drawing-writing tests (Hamdiyati et al., 2018a; Jalmo & Suwandi, 2018) interviews (Jee et al., 2015), concept maps (Drach-Zahavy et al., 2017; Hamdiyati, Sudargo, Redjeki, et al., 2018). In this study, drawing-writing techniques, concept maps, and interviews were used for analyzing students' mental models of fungi.

Fungi is one of the biology concepts which had some learning difficulties for students (Hasruddin & Putri, 2014; Tekkaya et al., 2001). The results showed that the percentage of high school students' learning difficulties on Fungi material was very high in identifying characteristics (64,59%), differences in characteristics of each group (56,63%), and reproduction of fungi (54,87%) (Hasruddin & Putri, 2014). Students' learning difficulties on Fungi subject matter influenced by external factors, one of the factor is teacher (Hasruddin & Putri, 2014). Teachers have important roles and responsibilities in forming conceptions in students' cognitive structures (Kurt, 2013). Based on research conducted by Hamdiyati et al. (2017) on students who are prepared to become biology teachers, it is known that Fungi's mental model based on drawing-writing techniques is at the D2/W1 level or irrelevant drawings and no explanations (Hamdiyati et al., 2017). It was also stated that most students chose to describe fungi or Basidiomycetes (56%), while others chose to describe molds and not a single student described yeast (Hamdiyati et al., 2017). This indicates that students who are prepared to become biology teachers still find incomplete understanding and misconceptions. Therefore, it is important to analyze high school students' mental models of fungi to understand their representation and find out if there are misconceptions like those of biology education students. Analyzing students' mental models is also beneficial for the teacher as a reference in improving their methods to correcting students' misconceptions on fungi matter.

METHODS

Research Design

This research uses a descriptive analytic method by describing the condition of students' mental models. This study uses a quantitative-qualitative analysis with an explanatory design (quan followed by qual). The findings of the quantitative study (draw-write tests and concept maps) determine the type of data collected in subsequent qualitative studies (interviews and questionnaires)

Participants

The participants involved in this study were 30 students of class X SMA Negeri in the city of Bandung. The criteria for the participants are students who have received material on fungi at the high school level.

Procedure

Quantitative data was collected using drawing-writing techniques and concept maps, while qualitative data was obtained from interviews, and questionnaires. The drawing-writing test instrument consists of four essay questions, two of which are instructions for drawing and explaining the structure of fungi, while the other two are related to the reproduction of fungi. Interviews are only conducted to have interesting answers so that more in-depth results can be obtained. Interviews were conducted to represent various levels of mental models while questionnaires were used to explore students' learning experiences.

Data Analysis Techniques

The analysis used in this study is a descriptive analysis. In the drawing-writing test, students' answers are classified according to a rubric adapted from Hamdiyati et al. (2018a) The rubric for the assessment of drawing-writing techniques is in Table 1.

Table 1
Rubric for Drawing-Writing Test

Level	Statement	Drawing	Writing
Level 1	There is no drawing/writing	D1	W1
Level 2	Wrong or irrelevant drawing/writing	D2	W2
Level 3	Partially correct drawing/writing	D3	W3
Level 4	The drawing/writing had some mistakes	D4	W4
Level 5	Thoroughly correct and complete drawing/writing	D5	W5

Students' concept maps were analyzed using a rubric derived from the reference concept map. Furthermore, the percentage of student scores obtained from these calculations is compared with the mental model rubric for concept maps. The rubric for assessing the respondent's concept map refers to Table 2.

Table 2
Rubric for Concept Maps

Score	Mental Model Level	Description
1	Emergent	Less than 25% of the essential concepts are raised, the relationships between concepts are fully and correctly illustrated with the right connector, hierarchy and cross-links are also appropriate
2	Transitional	Only 25-50% of the essential concepts are raised, the relationships between concepts are fully and correctly illustrated with the right connector, hierarchy and cross-linking are also appropriate
3	Close to extended	Only 51-75% of the essential concepts are raised, the relationships between concepts are fully and correctly illustrated with the right connector, hierarchy and cross-links are also appropriate
4	Extended	More than 75% essential concepts are raised, the relationships between concepts are fully and correctly illustrated with the right connector, hierarchy and cross-links are also appropriate

(Hamdiyati et al., 2018b)

RESULTS AND DISCUSSION

1. Student's Mental Model based on Drawing-Writing Test

In this study, the researcher tried to generalize the students' answers by choosing a representative answer for each level. However, each respondent gave various and different answers so that the sample chosen by the researcher was not same for each student at the same level. This is because the mental model is identical for each person. After all, it is based on the thoughts and understanding they have. The mental models identified in this study varied. The distribution of the number of students in the level of the mental model of the functional structure material is presented in Table 3.

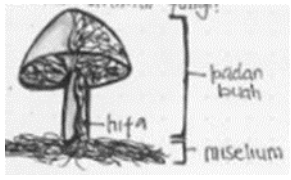
Tabel 3
Distribution of Students' Mental Model on Fungi's Structure

	W1	W2	W3	W4	W5
D1					
D2		2			
D3		3	13	1	
D4			1		
D5		1	1	2	4

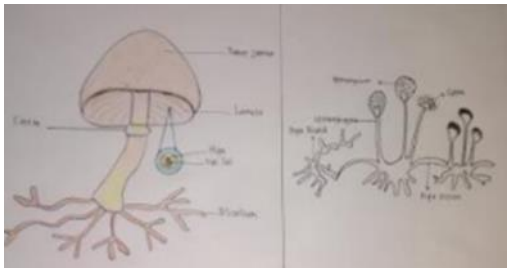
In the fungi structure material, the lowest level was found at the D2 W2 level, while the highest level was at the D5 W5 level. The dominant distribution of students is at the middle level, namely D3 W3. The students' answers regarding the structure of the fungus are shown in Figure 1.

On the answers of students with level D2 W2 (Answers and pictures are wrong or irrelevant). In question number 1 related to the picture of the structure of fungi, the student described three structures of fungi that he knew. The student presented the structure of yeast, mold, and fungal hyphae without being described of the structure. However, the image of the hyphae structure is still unclear and very simple, so it is difficult to describe it as a fungus or fungus. Most of the students' mental models are in the D3 level picture (partially correct picture). At this level, it is seen that the students only describe and explain the structure of fungi, while the structure of yeasts and molds is not discussed. Meanwhile, the answer with the highest level is D5 (correct and complete picture). The student's drawings were observed to be complete, including the three types of fungi in question and their descriptions. Seen in the structure of the yeast is described as complete to the inner structure.

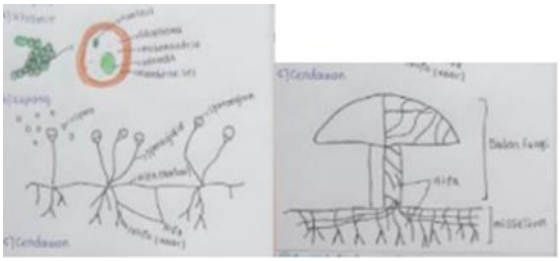
Level D2



Level D3



Level D4



Level D5

Figure 1. Comparison of Various Students' Model Mental Through Drawing Test on Fungi's Structure

Meanwhile, the comparison of students' mental models in the writing test (W) for the fungi's structure is presented in Table 4. Based on the table, it is known that there are various levels of students' mental models found, starting from level W2 to W5.

Table 4
Comparison of Student's Model Mental through Writing Test on Fungi's Structure

Level	Students' Model Mental
W2	Yeast structure: budding, unicellular, by asexual. Hyphal fungi structure: like creeper, produce spores. Mold Structure: by asexual and sexual, unicellular
W3	Fungal body structure consists of eukaryotic cells composed of cell walls containing chitin. The fine threads that make up the body of the fungus are called **hyphae**. The mycelium will form a braid until the formation of a fruiting body as in straw mushrooms.
W4	Yeast (unicellular): Yeast is a fungus that has a single cell. Mold (multicellular): Mold is a fungus that has filamentous cells called hyphae. Mushroom (multicellular): Mushroom is fungi that are formed from hyphae that branch and form a network of masses that are often called mycelium.
W5	a. Yeast: unicellular fungal structure. Nucleus: the nucleus of the cell which is the center of the cell Cytoplasm: the part of the cell that is enclosed by the cell membrane. Mitochondria: site of cellular

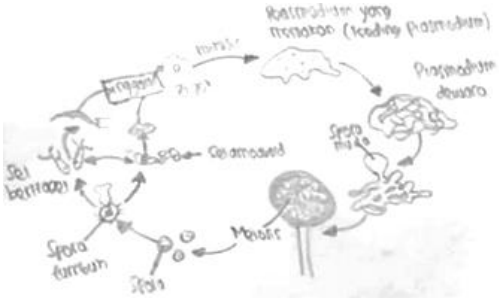
Level	Students' Model Mental
	respiration. Vacuole: membrane-bound organ in fungi. Plasma membrane: protects the organs inside the fungus. b. Mold: a multicellular fungal structure. Consists of hyphae, which are cells that make up the fungus, forming elongated threads. The cotton-like structure is called mycelium. Hyphae form into 2, namely stolon and rhizoid which will produce sporangiophores and sporangium. c. Fungi: consist of elongated threads called hyphae. The hyphae can be branched called mycelium. Then the hyphae can form fungal bodies and mycelium. The structure of this fungus includes macroscopic multicellular.

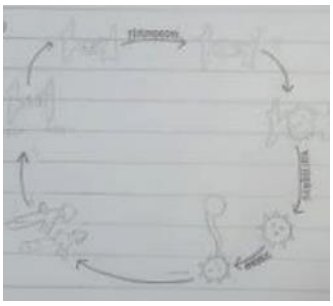
Based on the test on the structure, several irrelevant answers and errors were found for the W2 level. Some of the explanations mentioned are not clear and not related to what was asked. As the yeast explains, "to form buds, asexually". Similarly, the description of the hyphae fungi described, "like spreading, spore". Meanwhile, at the W3 level, most students only revealed one type of fungus, namely fungi, while yeasts and molds were not reviewed. In analyzing mental models for level W4, students have written structures for three different types of fungi, namely yeast, mold, and fungus. However, at this level, students have not explained the entire morphological structure, only describing the general structure. The highest level, W5, students have started to explain in detail the structure of the morphology of the fungus in question. Even for yeast, students explained the organelles contained in yeast quite completely. Likewise with the complete structure of molds and fungi. Almost like the mental model of the expert, where some of the keywords that are the core of the answer have been written down in full. In addition to the material on the structure of fungi, a drawing and writing test was also given to determine the students' mental models on the reproduction of fungi. The results obtained from all respondents are presented in Table 5 below. Most students are at the mental model level D3 W2. The lowest mental model level was found at the D1 W1 level, while the highest level was at D5 W5.

Table 5
Distribution of Students' Mental Model on Reproduction of Fungi

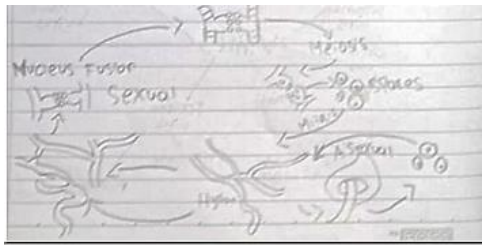
	W1	W2	W3	W4	W5
D1	1	1			1
D2	1	1		1	1
D3		5	2	2	1
D4		4		1	
D5		2	1	1	1

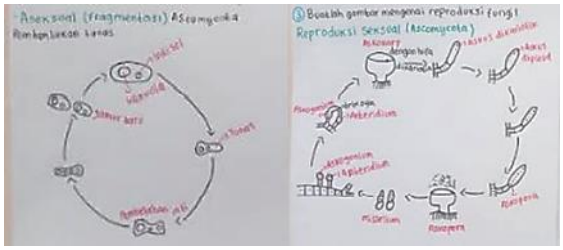
The comparison of each mental model level for the drawing test is shown in Figure 2. The lowest mental model level is at the D1 W1 level. Students at this level chose not to answer questions related to the reproduction of fungi so that they were classified at level 1, both in drawing and explaining. Meanwhile, several errors were found in some students with a D2 score, namely incorrect or irrelevant answers. Students at this level present pictures of reproductions of Myxomycetes or slime molds that are not fungi. Most students described only one way of reproduction for the D3 level. Students only describe the sexual reproduction of fungi. At this stage, students draw quite completely and can be understood. While at level D4 for the reproduction of fungi, students have mentioned two ways of reproduction, namely sexual and asexual, but the steps given are not complete. The highest mental model level is D5 (true and complete picture). In the picture it can be analyzed that students describe and explain reproduction in two ways, sexual and asexual. The description given for each stage is quite complete, along with showing the parts in the picture.





Level D2 Level D3





Level D4 Level D5

Figure 2. Comparison of Various Students' Model Mental Through Drawing Test on Fungi's Reproduction

In the writing test (W) several examples of student answers representing the mental model level, ranging from W1 to W5 are presented in Table 6. At the W1 level, there are no answers given by students. At the W2 level, there are student answers that are not relevant to what was asked. The question asked is an explanation regarding the stages of the two modes of reproduction of fungi. Meanwhile, students at the W2 level answered related to the notion of sexual and asexual reproduction. Students with mental model level W3 explain only one way of reproduction, namely sexual reproduction. Students with mental model level W5 have described each stage completely. The student also explained the two ways of reproduction, namely sexual and asexual. At this level, students' understanding is comprehensive.

Table 6.
Comparison of Student's Model Mental through Writing Test on Fungi's Reproduction

Level	Students' Model Mental
W1	There is no answer.
W2	Sexual: involves two parents and produces unequal offspring with the parents. Asexual: involves one parent and produces offspring genetically identic to the parent.
W3	- Hyphae (+) and hyphae (-) are close together to form gametangium - Plasmogamy - Karyogamy - Cleavage - Becomes germinated, forming sporangium
W4	Fungi reproduce asexually and sexually. Reproduction by asexuality occurs with the formation of buds or buds in unicellular fungi and breaking of hyphal threads (mycelium fragmentation) and spore formation asexual (vegetative spores) in multicellular fungi. Sexual spores are produced through syngamy.
W5	Sexual reproduction, stages: - Plasmogamy: fusion of cell nuclei to produce cells heterokaryotic/dikaryotic. - Karyogamy: The fusion of cell nuclei to produce a zygote. - Meiosis: the zygote divides by meiosis to produce haploid spores called sexual spores. - Spore germination: spores will form haploid hyphae which will grow and become a new individual. Asexual reproduction, carried out by: - Formation of asexual spores: carried out by types of multicellular fungi and without involves the fusion of two hyphae. - Fragmentation: pieces of mycelium grow into new individuals, occurring in multicellular fungi. - Budding: forming shoots that will become new individuals, occurs in unicellular fungi

2. Students' Mental Model based on Concept Maps

Concept maps have been widely used as an instrument of various studies that have been carried out, one of which is in the analysis of mental models. There are various findings obtained from all respondents. The distribution of the number of respondents based on the mental model level using the concept map is listed in Figure 3.

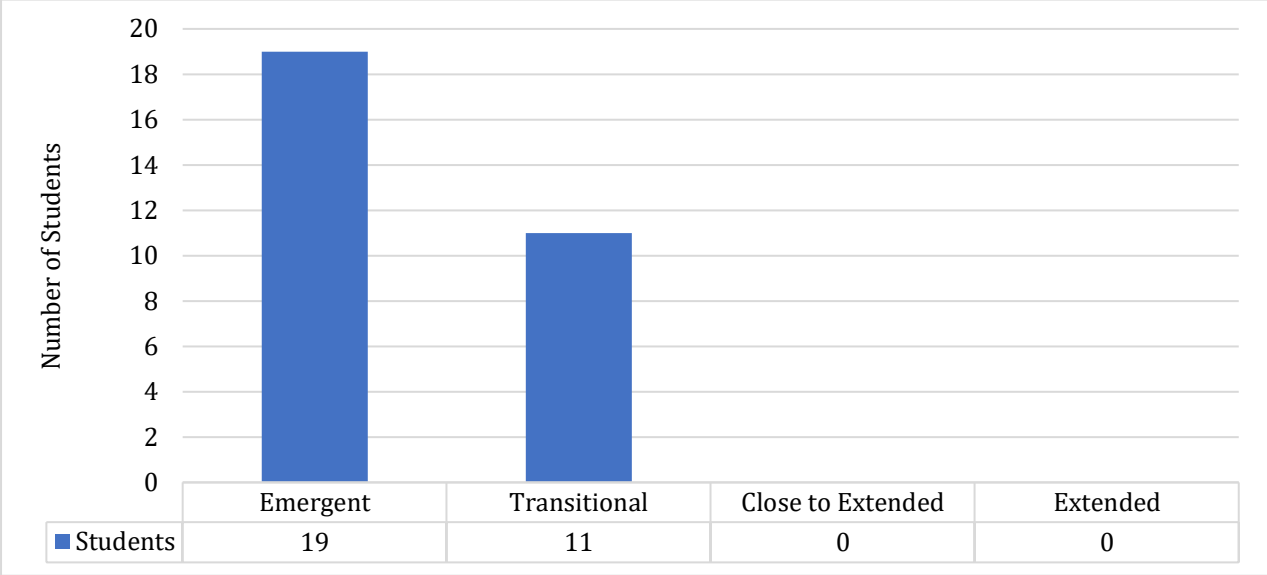
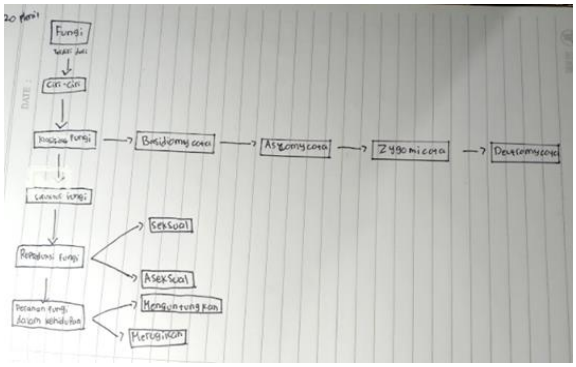


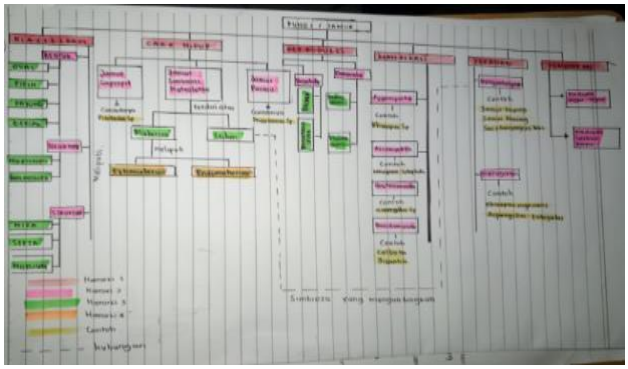
Figure 3. Students' Mental Model through Concept Maps

From all respondents, it was found that 19 students (63.33%) were still at the lowest level or emergent (developing). Meanwhile, the other 11 students (36.67%) are at the transitional level. There are no students who occupy the level of close to extended (close to complete) or extended (complete). The example of the concept map made is in Figure 4. In the emergent level concept map (developing), the hierarchy presented by the student is still not clear, there are no visible differences between hierarchies or different colors between hierarchies. In addition, concept map components such as correct propositions, examples, and cross-links have not been found yet. Thus, students have not been able to explore further their understanding of functions because they have not been able to analyze the relationship between concepts that can be one of the characteristics of mental models.

Meanwhile, at the transitional level, students have paid attention to the concept map components, such as conjunctions, examples, and cross links. Meanwhile, some students still filled in the boxes with non-concepts, such as way of life, reproduction, classification, and roles. Students at this level have started to try to analyze and create cross links or dynamic relationships between concepts. However, from all students who made crosslinks, no valid cross links were found.



Emergent level Mental Model



Transitional level Mental Model

Figure 4. Students' Concept Maps on Fungi

3. Students' Mental Model based on Interview

On the structure of fungi, interviews were conducted for the mental model level D2 W2 (pictures and answers were incorrect or irrelevant). In the answers they wrote, students wrote various structures of fungi, such as yeast, fungal hyphae, and molds. Students' answers about fungal hyphae are still unclear because fungal hyphae make up mold and fungus fungi. In addition, the researchers tried to explore students' understanding of fungal hyphae, as they were drawn and written. When asked about what he understood about fungal hyphae, students answered as follows.

"*Fungal hyphae have a thread-like structure and spread*"

Then the researcher reviewed the answers of students who paired fungal hyphae with yeast and molds, then asked whether fungal hyphae were a type of fungus and were asked to give examples. Students answer as follows.

"*Yes ma'am, fungal hyphae are a type of fungus, for example, Rhizopus oryzae, aren't they? I still don't understand*."

Based on their answers, students assume that fungal hyphae are a type of fungus. Furthermore, the students also mentioned *Rhizopus oryzae* as an example of a type of fungal hyphae with some hesitation.

Researchers tried to analyze the alignment of the results of the drawing-writing test and concept maps related to the structure of fungi. Based on the concept map made, the student is still at level 1 (emergent). In the concept of functional structure, students do not discuss in detail the parts that exist in the fungus. Moreover, students did not mention the types of fungi such as yeast, mold, and fungus. This shows that students do not yet have complete knowledge of the concept of functional structure based on interview analysis, drawing-writing tests, and concept maps.

4. Similarity between Students' and Expert Mental Model

In general, the profile of students' mental models on the material of fungi is quite diverse. The comparison of students' mental models that are like the mental models of experts or are at the highest level is only a small part. This comparison is based on the number of students who are at the highest mental model level, namely D5 W5 (drawing and complete writing) for the drawing-writing test. Based on the drawing-writing test, as many as 14.28% of students have similarities with the mental model of the expert on the material structure of fungi, while 3.57% of the students on the material on reproduction of fungi are like the mental model of the expert.

In the analysis of the suitability of the material for the structure of fungi, the drawings made by students resembled experts. Students have also shown each part of the structure of the three types of fungi, namely yeast, mold, and fungus. However, there is a slight difference in the picture on the structure of yeast, that is, students describe the organelles of yeast cells without reviewing their reproductive structures. In contrast to the expert, who described the structure of yeast and its typical type of reproduction, namely budding.

While on the material of reproduction of fungi, students have also described two ways of reproduction, namely sexual and asexual. This is like what experts describe. However, there is a difference in the answers to the explanations. Experts write general reproduction answers which can apply to most types of fungi, in contrast to students who specifically explain only one type of fungus, namely Ascomycota. However, the researcher found various congruences between the student's statement and the expert's statement.

The formation of mental models is related to the relationship between information, where students' prior knowledge is added to new knowledge gained based on experience. Thus, it is important to explore students' mental models as a representation of their learning outcomes. In this study, the analysis of students' mental models used drawing-writing test instruments, concept maps, and interviews in revealing students' mental models.

The drawing and writing test were given by students to reveal how the results of the student learning process were. The drawing and writing test are an efficient technique in collecting natural data from students' hidden thoughts, understandings, views, and attitudes (Kurt, 2013). Research conducted by (Hamdiyati, Sudargo, Fitriani, et al., 2018a) explained that the drawing-writing test is an expression of mastery of concepts and is effective for seeing changes in the initial mental model to the target mental model. Meanwhile, Kinchin et al. (2000) present a concept map that can show what knowledge students have and describe how that knowledge is structured in students' minds. Interview results can provide a more realistic picture of the differences in student understanding (Saptono et al., 2017). Through interviews, students' difficulties and lack of understanding can be explored in more detail. As indicated by the student's answer describing the structure of fungal hyphae. Where he considers fungal hyphae is a type of fungus not a constituent of fungi. This is different from the existing theory, as explained by Postlethwait & Hopson (2006) that hyphae are constituent filaments in fungi, where the cell wall contains chitin, which is different from plants. Thus, hyphae are the constituent parts of fungi and not fungi. But his opinion about *Rhizopus* as a fungus that has hyphae is correct, but that does not mean it belongs to the group of fungal hyphae, while he also describes and explains molds. According to Hamdiyati et al. (2017), that even though the concepts they have are scientifically correct, one's mental model can still be at a low level because of the incorrect relationship between concepts. So, it takes complete knowledge to be at the level of a mental model approaching an expert. Study conducted by Albaiti et al. (2022) stated that high school students' mental models' tests showed that most high-cluster students were able to

think abstractly, especially in giving explanations at the sub microscopic level when compared to medium-and low-clusters students.

In line with this, the mental model can see the extent to which students understand or misunderstand a concept. Sreelohor et al. (2022) stated the first stage to change students' misconceptions is a psychological base, including constructivist theory and cognitive theory (mental model). Thus, mental model theory can predict the relative difficulty and specific errors made by students (Johnson-Laird et al., 1986) As identified through interviews in which students experienced errors due to difficulty understanding the concept of fungi.

This result was clarified by the concept map he made, where students did not write down concepts related to the structure of fungi, either yeast, molds, or fungal hyphae, as he wrote in the drawing-writing test. So that students have not been able to explore propositions and cross-links which indicate that their understanding is not comprehensive. Thus, there is a suitability between the results of the drawing-writing test, concept map, and interview. Other example, students who are at levels 1 and 2 for the drawing-writing test still have not written the structure and reproduction on the concept map, he has not been able to dig further in terms of uncovering examples to cross-links.

Differences in mental models of experts and students cannot be separated from the differences in characteristics between the two. (Jansoon et al., 2009) argues that an expert is someone who has knowledge and abilities with experience through training and education in a particular field of science. While a student or beginner is new to a particular field of science. Thus, experts can modify, connect between topics of discussion, and have the capability to solve problems (problem-solving) which are influenced by high content knowledge in their fields. In contrast to students who still lack content knowledge, they tend to solve problems by using rote which often shows inappropriate concepts (Jansoon et al., 2009; Jee et al., 2015). In the results obtained, the similarity of students' mental models with experts is also still quite far because various errors have been identified in students. This error can occur due to lack of understanding of a concept, difficulty in finding relationships between concepts, limited formal and informal learning experiences, and lack of teacher understanding of certain concepts (Cakir & Crawford, 2001). Thus, the questionnaire was distributed at the end of the study in revealing students' learning experiences.

Zhao et al. (2020) revealed that students who integrated two learning resources in the form of text and images had better answers, among those who only used one of them. Likewise with videos that involve audio-visuals. Visual media allows people to quickly understand the overall structure of the subject (Zhao et al., 2020). Thus, the learning process is very important in forming students' mental models. This is because mental models are considered as individuals' personal ideas and are built on what they learn, so they are special for everyone (Byrne, 2011; Michael, 2004)

In addition to learning resources, the intensity and amount of time in learning is also important. Based on research conducted by Drach-Zahavy et al. (2017) regarding the similarity and accuracy of the mental models of early and final level nursing students using concept maps, it was found that the concept maps of final year students were more like the mental models of experts compared to early level students. He further explained that the concept map for early-level students was produced from the results of remembering material from short-term memory, so the results had not yet reached the analysis stage (Drach-Zahavy et al., 2017). In line with the results obtained for the concept map, that none of the students approached the expert mental model. This is due to the lack of analysis indicated by the lack of depth in the concepts written to the lack of ability to determine cross-links.

Complex mental operations are necessary to build comprehension of the concepts. This mental operation exemplified as processing information, structuring in the mind, thinking, and mental model development (Gunes, 2022). The results obtained have not been maximized, one of which is influenced by the learning process carried out. Fungal learning is carried out asynchronously, where students are only given material related to fungi, even though it is equipped with pictures and videos to explain the structure and reproduction of fungi. The lack of interaction between students and teachers can be the cause of the student's mental model not being formed optimally. Thus, the results obtained from this study indicate that there are still far from similarities and compatibility of students' mental models with expert mental models. This can be used as a reference for evaluating the extent to which the learning process is going well. Therefore, learning strategies are needed to improve students' mental models so that they approach the mental models of experts.

CONCLUSION

The mental model of high school students on fungi varies. Some students have been able to describe and explain completely and in detail. However, there were still some students who experienced

conceptual errors, did not understand, or did not answer the questions given. The students' mental models in the drawing and writing test were mostly found at the D3 W3 level (46.43%) for the material on the structure of fungi. The lowest mental model was found at the D2 W2 level and the highest at the D5 W5 level. Meanwhile, most of the reproductive material for fungi was found at the D3 W2 level (17.85%). The lowest mental model was found at the D1 W1 level and the highest at the D5 W5 level. The answers to the interviews showed concordance with the results shown on the drawing-writing tests and concept maps. Through interviews, it was also found that there were differences in the depth of understanding among students with equal levels. The questionnaire shows the learning experiences as well as the difficulties the students encountered in learning the function. Based on the analysis of the suitability of the student's mental model with the expert's mental model, in the drawing-writing test, 4 students (14.28%) had similarities with the expert's mental model on the material structure of fungi or were at level 5 (the highest). While as many as 1 student (3.57%) on the material of reproduction of fungi is like the mental model of an expert. The results of this mental model research can be used as a reference for teachers in designing learning, especially in online learning. Variety and interaction are needed in creating a learning experience that allows students to develop, even if only learning from home. Identification of misconceptions and errors can also be obtained from analyzing this mental model. Thus, the results obtained can be further developed as needed. In addition, research can be designed better so that students can be sure to work honestly.

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