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Cooperative learning and students' interest in learning biology

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Abstract

This research aimed to observe cooperative learning and biology learning interest of MA Aisyiyah Binjai City students. This study used quantitative research. The sample in this study were 26 students of class X-A MA Aisyiyah Binjai City and 1 biology teacher. The research instruments were a questionnaire on learning interest in biology subjects and with a biology teacher. Based on the research and data analysis, the highest percentage of scores for the indicators in the questionnaire statement was 30.1% for attention to biology subjects, indicating a high category. Therefore, it can be concluded that cooperative learning and biology learning interests of MA Aisyiyah Binjai City students were running well.

Keywords

Cooperative learning, interesting learning, biology, student

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Introduction

According to Afni (2019), a learning model can be conceptualized as a framework that embodies a series of systematic actions designed to orchestrate learning experiences so that predetermined instructional objectives may be achieved. This conceptual framework enables educators and instructional designers to strategize and implement pedagogical activities. Furthermore, a learning model can be construed as a pattern employed to design instructional materials and guide teaching activities occurring within classroom settings or alternative learning venues.

Joyce's seminal research (2013) characterizes learning models as representations of the learning environment and teacher behavior during the instructional process. The applications of learning models extend beyond mere lesson planning to encompass curriculum development, instructional material design, and multimedia program creation. According to Trianto (cited in Gunarto, 2013:15), learning models constitute comprehensive plans utilized as pedagogical guides for designing classroom instruction or tutorial sessions. These models encompass approaches, objectives, stages, environmental considerations, and classroom management strategies. They serve as systematic frameworks for achieving educational objectives through the implementation of specific strategies, techniques, methods, materials, media, and assessment instruments. Such models demonstrate efficacy in enhancing instructional quality by fostering active student engagement, promoting higher-order thinking skills, and cultivating collaborative teamwork dynamics.

The cooperative learning methodology is predicated upon Vygotsky's Social Constructivism theory. The fundamental tenets of Vygotskian theory posit that cognitive development originates at birth as an inherently social process. Children receive scaffolding from more technologically proficient peers and adults within their cultural milieu. Vygotsky postulated that collaborative learning within appropriate developmental zones (Zone of Proximal Development, ZPD) significantly facilitates cognitive advancement. Learning interest represents a synthesis of two conceptual components—'interest' and 'learning'—both possessing substantial pedagogical significance. Gie (2004:57) attributes three primary functions to interest: immediate engagement facilitation, enhanced attentional focus, and external distraction mitigation. Slameto, as cited by Asmani (2009:32), defines interest as an intrinsic preference and attraction toward particular objects or activities absent external coercion. Interest correlates closely with personality characteristics and encompasses three psychological dimensions: cognition, affect, and volition. While interest occasionally emerges spontaneously, it often requires deliberate cultivation. Interest can therefore be characterized as an internal disposition toward specific phenomena that encompasses pleasurable sensations, cognitive engagement, authenticity, and purposeful goal orientation. According to Morgan, cited by Purwanto (2010:84), learning is defined as relatively permanent behavioral modifications resulting from practice or experiential encounters.

Based on the aforementioned definitions, learning can be synthesized as a process whereby behavioral modifications occur through intentional activities. Learning interest encompasses an individual's enthusiasm, volition, and enjoyment in pursuing knowledge and experience acquisition. The magnitude of students' learning interest is manifested through their levels of enthusiasm, participation, and active involvement. This interest exerts considerable influence on student activity, as instructional content misaligned with student

interests may precipitate diminished motivation and engagement. Learning interest, pedagogical models, and academic outcomes exist in reciprocal relationships whereby each element influences the others. Engaging instructional models can amplify student learning interest. Conversely, diminished learning interest potentially generates adverse effects on academic achievement, whereas elevated interest levels may yield superior learning outcomes. Consequently, an integral connection exists among instructional models, learning interest, and academic performance.

Through interviews conducted with a biology instructor at MA Aisyiyah Binjai City, it was revealed that the educator implements the Cooperative Learning model. Within this pedagogical framework, students are organized into discussion groups to engage with instructional content. Each group conducts deliberations regarding the assigned material, subsequently presenting their findings to the entire class. These presentations culminate in comprehensive discussions involving all students and the instructor. The educator selected this instructional approach based on its capacity to stimulate active participation from all classroom members. Additionally, this model fosters reciprocal interactions between students and instructors during content delivery. However, the implementation occasionally encounters challenges wherein certain students exhibit diminished engagement, relying upon academically stronger group members to complete assigned tasks. This instructional model necessitates substantial learning interest, as educators merely provide foundational content to each group, expecting students to conduct independent research through textbooks and digital resources, engage in intragroup discussions, and subsequently present findings for collaborative examination by both instructor and peers. Recognizing these challenges, the researcher was motivated to investigate the influence of the cooperative learning model on students' biology learning interest at MA Aisyiyah Binjai City.

Methodology

This investigation employs a quantitative research methodology, with data derived from observational analysis of research subjects. The research data comprises both primary and secondary sources. The primary data source consists of questionnaire responses regarding learning interest from Grade X-A students at MA Aisyiyah Binjai City. Secondary data sources encompass interview transcripts and documentary evidence, specifically student achievement records obtained from the biology instructor of Grade X-A at MA Aisyiyah Binjai City. The questionnaire instrument comprises 20 statement items, constructed according to learning interest indicators as delineated in Table 1.

Table 1. *Indicators of student learning interest questionnaire for biology subject*

No	Indicators	No.
1.	Dislike in biology	1,4,6,7,12,20
2.	Interested in biology	2,3,7
3.	Enjoyment in biology	8,9,11,13,14
4.	Concern for biology	5,15,16,17,18,19

(Source: Modified from Munif 2019)

The questionnaire employs a Likert scale for each statement. Researchers utilized a four-point Likert scale comprising: Strongly Disagree (STS) scored as 1, Disagree (TS) scored as 2,

Agree (S) scored as 3, and Strongly Agree (SS) scored as 4. Given the quantitative nature of this investigation, data analysis was predicated upon percentage calculations derived from individual student responses to the questionnaire. The following formula was employed to determine the percentage of obtained scores: Source: Arikunto (2006:81), Formula symbols: N = total data / sample F = response frequency P = percentage. The data processing results, expressed as percentages, were subsequently interpreted according to the classification presented in Table 2.

Table 2. *Interpretation of student learning interest in biology subject*

Criteria	%	Categories
1	0%-25%	Totally inappropriate
2	36%-50%	inappropriate
3	51%-75%	appropriate
4	76%-100%	Totally appropriate

Source: Fernandez (2021)

Results and Discussion

Based on observations conducted involving Grade X-A students at MA Aisyiyah Binjai City, questionnaires were administered as instruments to measure students' biology learning interest. The questionnaire comprised 20 statements designed according to four indicators established by the researchers, as enumerated in Table 1. The sample data obtained in this investigation are presented as follows.

Tabel 3. *Distribution of questionnaire results*

No.	Indicators	(%)
1.	I dislike reading books related to biology	30,8
2.	Reading books related to biology always makes me interested	30,8
3.	Learning new things in biology always makes me interested	34,6
4.	I don't think listening to the teacher explain is very important, because all the material is already in the textbook.	38,5
5.	When the teacher is delivering biology lessons, I am very focused and give my full attention	34,6
6.	During free periods/holidays during biology lessons, I really enjoy it	34,6
7.	Becoming a specialist in a field related to biology makes me interested	34,6
8.	I find studying biology very useful because it always relates to nature	42,3
9.	Since entering elementary school, I have always enjoyed natural science lessons	38,5
10.	My future aspirations are not supported by biology lessons	34,6
11.	Because I feel good at biology. So I feel like I can be anything I want to be	50
12.	During biology class, I really don't like to attend.	42,3

13.	The material in biology class is presented in an interesting way, which makes me enjoy biology.	34,6
14.	During biology class, I feel very happy	26,9
15.	I work on the questions before the teacher asks them	34,6
16.	When the material isn't clear, I ask the teacher	38,5
17.	When the teacher asks a question, I always try to answer it correctly.	50
18.	If there's biology class tomorrow, I'll study that night.	38,5
19.	Outside of biology class hours, I take extra lessons	46,2
20.	When using my cell phone, I never like to search for biology-related materials	46,2

From the percentage results of questionnaires distributed to student respondents, the following percentages were obtained based on questionnaire indicators:

Dislike toward biology subject.

P = × 100% P = × 100% = 20.5%

Interest in biology subject.

P = × 100% P = × 100% = 26.9%

Enjoyment of biology subject.

P = × 100% P = × 100% = 26.9%

Attention toward biology subject.

P = × 100% P = × 100% = 30.1%

Based on survey data regarding students' biology learning interest, findings revealed that 30.1% of students demonstrated elevated interest in the subject. This percentage exceeds the proportion of students expressing dislike for biology, which stood at 20.5%. Consequently, it can be concluded that a substantial number of students possess genuine interest in biology education.

Based on research findings regarding the influence of cooperative learning models on students' biology learning interest at MA Aisyiyah Binjai City, evidence suggests that such interest has achieved a satisfactory level. This conclusion is substantiated by the fact that the percentage of the 'dislike toward biology subject' indicator (20.5%) was considerably lower than the percentages for 'interest in biology subject' (26.9%), 'enjoyment of biology subject' (26.9%), and 'attention toward biology subject' (30.1%).

Analysis of questionnaire data revealed that the highest percentage (30.1%) corresponded to the 'attention toward biology subject' indicator. During interviews, researchers ascertained that the biology instructor implements cooperative learning models in Grade X-A classes; however, several implementation challenges were identified. These included disruptions to student concentration caused by inadequately silenced mobile devices belonging to peers. Additionally, the classroom environment contained students exhibiting what might be characterized as 'unruly' behavior—specifically, inattention and disruptive conduct during instructional sessions. Rather than labeling such students as intractable, the

instructor recognized their behavior as manifestations of excessive activity driven by attention-seeking impulses, particularly pronounced in Grade X, representing a transitional phase between junior and senior secondary education (adolescence to young adulthood), during which pubescent development and interest in opposite-sex peers reach heightened levels. Such behavior does not constitute defiance toward the instructor. The educator's approach to addressing such students involves individual consultation, counseling, and inquiry into underlying issues. The instructor elaborated: 'Typically, such cases involve students receiving insufficient parental attention at home, consequently seeking attention within their school or peer environments where they find comfort. These students identify the classroom as a comfortable venue for attention-seeking because, despite desiring parental attention at home, their parents are occupied with employment obligations. I once consulted with one such student, discovering that one parent was preoccupied with employment while the other attended to agricultural work, leaving no time for the child—not even to wake them for school, resulting in frequent tardiness. Each child presents unique challenges, but the most influential factor invariably involves their home environment, which consequently manifests in their school behavior.'

According to research conducted by Hurlock (1980), as cited in the journal by Artha, NMWI, & Supriyadi, S. (2013), adolescent development encompasses three distinct phases. Early adolescence occurs between ages 11-13 years. Middle adolescence transpires between ages 14-16 years. Late adolescence extends from ages 17-20 years. Within this framework, Grade X students fall within the middle adolescence category, spanning ages 14-16 years. Sarwono's research (2006) characterizes middle adolescents as individuals aged 14-16 years who exhibit substantial peer relationship needs. These adolescents frequently experience decisional ambivalence, vacillating between sensitivity and indifference, gregariousness and solitude, optimism and pessimism, idealism and materialism, among other polarities. Hurlock (1980) identified the following developmental tasks that adolescents must navigate: establishing more mature peer relationships; cultivating appropriate interactions with both male and female peers; accepting and effectively utilizing their physical characteristics; anticipating socially responsible behavior; preparing for marriage and family life; and achieving emotional independence from parental figures.

Santrock (2012) elucidates that numerous variables may precipitate mental and emotional health difficulties in adolescents. These factors encompass social media influence, peer environments, academic settings, community contexts, and familial circumstances. According to Waty (2017), an individual's mental and emotional health challenges become more pronounced upon social interaction. When adolescents venture beyond their familial environments, surrounding contexts—including peer groups, schools, and communities—become primary venues for social interaction. These environments play pivotal roles in shaping adolescent personality, behavior, and emotional wellbeing.

As educators addressing students experiencing mental and emotional health challenges, as previously discussed, several intervention strategies may be implemented. One approach involves collaborative engagement with guidance counselors and homeroom teachers to provide specialized attention to affected students. Educators may also conduct home visits to consult with parents, thereby gaining insight into students' challenges and identifying appropriate solutions. Furthermore, teachers can provide supportive encouragement to sustain students' educational engagement and academic motivation.

This investigation examines cooperative learning as a pedagogical methodology involving small discussion group formation. Researchers sought to determine whether students preferentially select close friends or academically proficient peers when forming discussion groups. During interviews with the biology instructor, researchers inquired about this phenomenon. The educator explained that they personally organize discussion groups, ensuring equitable distribution. However, student residential proximity is also considered, with geographically proximate students grouped together. This strategy aims to reduce student burden and mitigate risks associated with collaborative work conducted at group members' residences.

According to research published in relevant literature by Barsihanor (2016), implementation of cooperative learning models utilizing inside-outside circle strategies demonstrably enhanced student academic achievement in Social Studies at MI Darul Mujahidin. Additionally, Laa's research (2017) established that implementing cooperative learning through the Student Teams Achievement Division (STAD) model effectively increased student learning interest. Both investigations align with the present research findings, which demonstrate the positive influence of cooperative learning implementation on biology learning interest among students at MA Aisyiyah Binjai City.

Conclusion and Recommendations

Based on the research conducted and subsequent analysis, it can be concluded that a relationship exists between the implementation of cooperative learning models in biology instruction and enhanced biology learning interest among Grade X-A students at MA Aisyiyah Binjai City. The biology instructor has appropriately implemented the cooperative learning model, as evidenced by satisfactory levels of student learning interest reflected in questionnaire percentage results. Notwithstanding successful implementation, the instructor encountered challenges with several students experiencing difficulties. This phenomenon may be attributed to Grade X students' transitional developmental stage from adolescence to young adulthood, during which heightened parental attention is typically required. Family environment constitutes one factor precipitating mental and emotional challenges in adolescents.

Consequently, this investigation demonstrates that cooperative learning model implementation can positively impact students' biology learning interest. However, parental attention and support remain critically important in assisting students to navigate challenges that may emerge during their adolescent years.

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