

# Rapid Learning Engineering (RLE) Models For Paragliding Lectures with Assembled Automatic Machine Launchers Protocols

1<sup>st</sup> Sahri  
*Sport Science Department*  
*Faculty of Sports Science*  
*Universitas Negeri*  
*Semarang*  
 Semarang, Indonesia  
[sahri@mail.unnes.ac.id](mailto:sahri@mail.unnes.ac.id)

2<sup>nd</sup> Sugiharto  
*Sport Science Department*  
*Faculty of Sports Science*  
*Universitas Negeri*  
*Semarang*  
 Semarang, Indonesia

3<sup>rd</sup> Nanang Indardi  
*Sport Science Department*  
*Faculty of Sports Science*  
*Universitas Negeri*  
*Semarang*  
 Semarang, Indonesia

**Abstract**—The text of this research article is part of the overall research aimed at creating procedures, protocols, and prototypes of the unit launching paragliding as a sports college activity. The expected benefit is to be able to test changes and improve the results of paragliding lectures at the Sports Science Study Program (department) of FIK UNNES compared to using conventional models that are commonly done, the rest producing launch machines is an inseparable part of this research. The approach adopted includes determining procedures, determining protocols, designing a feasibility test instrument in the form of a Rapid Learning Engineering (RLE) model for Paragliding with assembled automatic machine launchers. This type of research is development research, for the design of the model carried out in the research stage, namely the survey stage with the feasibility test of a random sample of students, resulting in the design of planning, implementation and evaluation models in Paragliding lectures. Based on the analysis of the research results it turns out that the Rapid Learning Engineering (RLE) model has a positive influence on the results of the Paragliding lecture skills test, and has a significant influence on the ability to master the lecture material. It is recommended to use this model in the effort of training, learning and Paragliding in clubs, Paragliding Sports schools and Paragliding Training Centers.

**Keywords**—*sports, paradigling, learning engineering model*

## I. INTRODUCTION

The ability to control gliders in Paragliding associated with the condition of students in lectures is something that needs to be evaluated continuously, so that the final product of lectures will get maximum results. The performance orientation of the skills applied by students in the field is evaluated by the effectiveness of the performance, which is defined as the results of lectures in Paragliding courses. Mastery of pre-flight preparation skills, ground handling, take-off, higher flight and landing during the Paragliding flight stage unit is more desirable to achieve greater Paragliding Sports performance. Research in the west and countries that have advanced in the development of Paragliding Sports has shown that the decline in performance of a Paragliding pilot during flight is highly correlated with better initial performance and ground handling capabilities [1] [2]. Therefore, a beginner pilot needs to direct

mastery of the initial stages of this Paragliding flight, to produce maximum performance throughout the flight phase.

Paragliding Lectures by prioritizing the stages of learning and using protocols, procedures and tool assistance, including specific strategies in Paragliding Sports, are often used by lecturers supporting subjects to increase acceleration or acceleration in learning [2] [3]. Lecture Model by adding command stages in standard procedures in Paragliding lectures including wearing additional work safety and safety tools, protocol ground handling, and flight procedures with towing [2]. Paragliding flights with the help of towing have a positive influence on novice athletes and are very effective in improving the launch performance from the ground [4] [3] [2].

In the initial Paragliding course, students are confronted with non-conventional procedures in the form of protocol ground handling and launching with the help of towing, with special instructions added to each stage of the lecture [4]. Lecture stimulus depends mainly on the clarity of speech and the emphasis of words coming out of the lecturer to students. Clarity of instructions and systematic or sequence of commands must be considered because they both affect the amount of attention and learning outcomes [5] [6].

The study of instruction in learning with an emphasis on systematic and clear sequence of commands shows that the utterance of every word that comes out of the lecturer can cause changes that might reduce the quality of understanding of each form of instruction in lectures [5]. However, considerable pressure in instruction may be needed to provide sufficient learning stimulus to increase command absorption and concentration development during the flight preparation phase [5] [7].

Other related research is the relationship between paragliding flight readiness and the relationship between emergencies during flight [4]. The main variables of this relationship are ground handling capability, self-control ability and potential leg injuries, which correspond to the maximum mechanical ability of the lower limbs to show good flight performance. These psychological and physiological

parameters are influenced by the nature of the body's flexibility, muscle-nerve activity, and joint-ligament-muscle configuration [3]. Furthermore, this is related to the ability to adapt the structure of the lower body to the body during the flight start.

Therefore, the relationship between students' readiness on the ground in the form of ground handling, understanding protocols and take-off procedures, and flight series to landing is important because they inform students about their psychic, physical, and emotional abilities and if there is an imbalance in their capacities. Individuals to produce safe flights. For example, two students with the same ground handling ability can present different take-off or launching profiles due to different psychological and physical combinations. Maybe one of them should focus more on honing ground handling abilities and the other should focus on learning more psychological self-control abilities. A greater understanding of integrated ground handling and take-off might also benefit students and lecturers. Based on the observations of researchers in the field (in Indonesia), it was found that the Paragliding club instructor or assistant instructor in monotonous learning activities, centered on the instructor, only used the drill approach, and only emphasized motor mastery while other aspects were ignored such as intellectual, mental and values other aerospace. As a result, club members tend to be indifferent, lack motivation in learning and practicing, feel bored, and lack creativity. Supposedly, goal-oriented learning and training designs need to be goal-oriented and try to adjust to the physical and psychological conditions of club members so as to carry out optimal learning and training activities.

A study of ground handling and takeoff-landing drills on a wide hill (without any obstacles = zero obstacles) can be an ideal effort to be used as a place for student learning. However, such an ideal system is very expensive to implement and complicated in the Paragliding Sports course in the Semarang Region, where the university is located. Furthermore, because of ground handling capability, the integration of takeoff with landing affects the entire flight, it is necessary to understand this effect not only at the first second but also at the end of the ideal flight stage. To our knowledge, there are no studies that analyze step by step starting to prepare for flight, ground handling, take off integrated with flight, ending in landing with a fast learning model using a built-in automatic engine.

To overcome the problems of learning spaces and training fields that have to be moved around, they are overcome by tactical launching methods or pulling students by tying a rope to the harness and then being pulled by three people so they can fly on flat terrain and minimal wind conditions. This manual tactical launch method is used as a teaching tool as a tutorial and practical exercise aimed at deepening the technique of flying by attracting students during takeoff which is still done manually. In the current era of science and technology, tactical launch method technology innovation is no longer done by manually drawn by humans, which is

commonly done in lectures to date. The tactical launch media using this machine can facilitate learning and drilling more often so students can perform and master basic flying techniques faster, but have the potential to reduce high cost and un-mobile for mobile lectures.

Based on the description, the authors formulate the existing limits to serve as a starting point in the discussion in this paper, namely the design of a paragliding Rapid Learning Engineering (RLE) with a launcher based on automatic engine assembly. With the aim, to test the influence of paragliding Rapid Learning Engineering (RLE) models with automatic engine-based launchers, on daily preparation capabilities, ground handling, take-off integration with low flight and landing techniques. It is expected that with the availability of tactical engine launch device design, students can easily perform and master the basic techniques of Paragliding take off with more efficient tactical launch media.

Paragliding Lecture model developed in this research is the design of paragliding Rapid Learning Engineering (RLE) models with automatic engine assembly-based launchers that require efficient motion skills. Therefore, starting to plan, carry out and evaluate Paragliding lectures must start from simple stages to advanced lectures, systematically, carried out repeatedly and progressively increasing the quantity and quality of the opportunities for achieving the objectives of lectures. This Paragliding lecture model is in line with the principles of Developmental Appropriate Practice (DAP) which prioritizes individual learning. This model is designed to help participants learn in developing themselves and their environment and their relationships with the surrounding community.

Paragliding in Indonesia has grown better, but among these sports only little research is related to it, and little is known about the specific behavior associated with it. Although adventure recreation, mainly due to tourist activity, is enjoyed throughout the world, several studies investigate the behavior of recreational adventure consumers [8]. Most foreign scientists adopted the adventure model of [6] in data analysis evaluating the activity, while [9] found the independent variable "activity participation rate" which did not have an appropriate measurement scale. He suggested replacing it with "lasting involvement" to ascertain how tourists find their interests and develop their skills [10]. Among the relevant studies, only [1] examined the personal or professional background, recreational motivation, and environmental characteristics preferences of paragliding consumers. Ho, Chung, and Chen (2005) use the [6] model to ensure that the long-term involvement of para-gliders means higher frequency of participation, skill levels and risk awareness.

Previous empirical research has focused on correlations, differences, and / or preferences for environmental attributes [1] [4]. Some studies explore demographic and behavioral differences [11] or analyze the impact of regional development paragraphs on the regional economy [12]. Others investigate involvement with regard to sports injuries [13] and

psychological effects [14]. In addition to recreational adventure participation behaviors, many concerns focus on motivation [5] [11].

Little research has examined the importance of behavior in ongoing participation. While previous recreational recreational behaviors have had an important influence [9], empirical research has not explored participation in this activity. Little is known about the behavior of continuous involvement. [15] argues that the analysis of future studies of involvement impacts participants in depth. Besides completing the gap of theoretical studies, it can also be the basis for the development of paragliding activities in Indonesia.

## II. MATERIAL AND METHODS

Based on the narrative outlined above, part of the research development (development research) about lectures by designing a paragliding Rapid Learning Engineering (RLE) with automatic engine assembly-based launchers using the Research and Development (R and D) approach, that according to [7] "Educational Research and Development is a process used to develop and validate educational products". The research procedure uses the Research and Development (R and D) model which is carried out in two stages, the first, conducting research in the form of literature studies, surveys, documentation and evaluations. Second, the activities of developing the concept of learning models, conceptual and operational testing to meet the degree of validity, limited trials and wider trials ended with the finalization of the desired learning model.

Practically, the research steps are as follows: (1) Conducting preliminary research in the form of a survey of the performance of lecturers in the management of lectures; (2) Arranging the initial design model of the learning model, starting to design the planning, implementation, and evaluation of learning; and (3) Conducting trials in two stages, namely limited trials and wider trials. Trials are limited in one class of study classes, while wider trials involve lecturers and students in all 4 study groups, with varying student abilities. The sample consisted of 20 male and female students with certain characteristics, healthy with a doctor's note, never had a heart attack and were not afraid of heights. Data collection techniques used in this study were observation, interviews, documents and questionnaires. Observations were made at each stage of the study, starting with the pre-survey stage, the development stage and the wider trial phase. Interviews and questionnaires were used at the pre-survey stage, the stage of model development and the pilot phase. Document analysis is used to collect data, especially in preliminary studies, namely to answer research questions relating to the planning and implementation of Paragliding sports lectures that have been applied by lecturers.

Specifically at this stage consists of establishing standard procedures for conducting a paragliding / learning program using the automatic machine assembly-based launcher, which includes 1) observation and orientation of the ground handling

field (soil conditions, gravel, tartan, chalk lines, grass, drainage, soil and environmental humidity conditions, wind speed-type-direction, solar heat); 2) preparation of supporting resources (keepers) and lecturing / learning equipment (personal, moral, individual and administrative equipment); 3) carrying out opening activities for the preparation of lectures (brainstorming, warming up, quiz, recalling apparatus and daily procedures); 4) the core of the lecture (according to protocol stage three of the research instrument not written in this article); 5) closing lectures (closing session); 6) analyzing the efficiency of time, cost, frequency of use of tools per person, achievement of the objectives of lectures and the absorption of lecture material; 7) determine conclusion points.

As an additional note, that to start the protocol for using the launcher in lectures re-observations and re-orientation of the lecture environment. This protocol includes 1) filling in point-to-point checklists of inspection tools and launch units to ensure that they are in good condition; 2) engine start (start the engine in stationary position); 3) give a code / signal that the launch engine is ready to use; 4) observe with a focus on each movement of lecture participants who carry out ground handling until they are ready to carry out the launch with the help of machines; 5) sensitive to any response made by paragliding units (people and glider units) while in the air; 6) adjust the gas pull gently and comfortably; 7) implement a decrease in tension and release gently (not stomping); 8) immediately returns to the engine's stationary position, and turns off the engine at the last launch session; 9) neatly set / reset the launch unit and make sure it has returned to its original state.

## III. RESULT AND DISCUSSION

The results of development research on lectures by designing a paragliding Rapid Learning Engineering (RLE) model with automatic machine assembly-based launcher, presented in several stages of the research results, namely: preliminary research results, the process of developing learning models, the results of limited trials and the results of more extensive trials.

Preliminary research results indicate that the normal lecture conditions, according to the prevalence of face-to-face lectures with the standard ecological procedures of sports lectures, are carried out according to the morning lecture schedule at 07:00, but there are some notes, namely 1) on observation activities and orientation of the field / ground handling field is noted that dry soil conditions are ideal for sports learning / lectures Paragliding, gravel and tartan in dry conditions there are waves in several places as a result of age (wear and tear), chalk lines are not clear, dewy grass tends to get wet until around 8:30 pm so that the new field is ready and ideal for lectures at the time, clean drainage channels from puddles are safe for in the case of orientation malls that lead to trenches, soil moisture conditions and less than ideal environments in the hours before 8:40, the direction-speed-type angina according to the shape of the field which stretches from north to south according to the wind that moves on

diagonal from southeast to northwest with an ideal wind speed of 7-9 Km/hr, ideal solar heat below 11:20 because above this time the heat is intense and angina starts to have a sign of changing direction to a sea breeze that blows from north to south at times above 12:20); 2) the preparation of supporting resources (keepers) is supported by 3 keepers coming from senior students of Paragliding activists, while the lecture / learning equipment and individual equipment have 5 units available and are classified as inadequate both in quality and quantity, however administratively it has been available in full; 3) carrying out opening activities for lecture preparation consisting of brainstorming, warming up, quiz, recalling apparatus and daily procedures carried out by lecturers correctly and systematically but students' attention is less focused; 4) at the core of the lecture (according to protocol stage three of the research instrument not written in this article) is implemented less effectively because it is constrained by the number of glider units and lecture area that are used quite broadly while lecturers without loudspeakers; 5) carrying out closing lectures at the closing session was recorded to be quite effective with questions and answers related to the material, however the shady situation under the tree made some students less focused;

The process of developing a learning model includes designing the initial planning of the learning model, the initial design of the implementation of the learning model, and the initial design of the evaluation of the learning model includes the following observational components:

1. Preparation Stage / Daily Inspection: 1) participants perform / show religious attitudes and behaviors before starting a series of activities; 2) carry out self-protective measures in a convincing manner, which include: - wearing a helmet to attach a safety strap with a "click" sound; spruce shoes up to the clothing parts as a whole; spread the glider carefully, with efficient and steady movements;
2. Carry out physical examination of the glider, line, both raisers and toggles carefully;
3. Carrying the harness by making sure the chest strap, leg strap, mainstrap are connected to the connector until you hear a "click";
4. Carry out the movement of setting inter connection raiser with harness convincingly;
5. Carrying out environmental orientation launching ground including wind direction and field punctuation in the form of wind shook and crepe paper strands; (as a note, that this component is carried out steadily by the lecturer, but it is not established by almost all students at the beginning of the study)
6. The Glider / Kiting Appointment Stage with the following observational components: -Partners perform / show a serious and steady attitude and

behavior start the glider removal with efficient steps and movements regulating the glider to form the glider wall with the glider's nose hole relatively facing upward steadily and convincing; - Carry out the glider control measures when gradually moving upward, showing a confident and focused attitude towards the glider and positioning the body towards the glider conclusively, within a specified period of time (incrementally) which includes: - Convincing to maintain the posture and position of the footing when the glider moves towards top and form a canopy; Showing calm and flexible attitudes and movements towards each glider's movements adapting to the movements of the wind; Maintain line tension in its position to form a canopy unit against the body, within the allotted time; Arrange to lower and tense back the glider line unit followed by a body turn that is reasonable and calm; Repeating point 4) steadily according to the specified stage; Lower the glider calmly and steadily to reshape the building of the glider wall on the ground while keeping the line tense; Safely maintain body positioning awaiting instructions for launch.

7. The Glider / Launching-Landing Technique Stage with the following observational components: - Participants perform / show a serious and steady attitude and behavior to start gliding the glider with steady and convincing steps and movements; Carry out the glider control steps when the actual unit glider moves to climb, showing a confident attitude and focus on the toggle glider in handling and positioning the body towards the harness-glider unit still in a normal take-off position; Maintain the position of the glider-harness unit steadily and convincingly within a specified period and continue the flight movement / flight of the glider-harness unit (gradually) which includes: - convincingly regulate, maintain the attitude and position of sitting on the harness comfortably when the movement of the glider forms the canopy with lower body movements; Showing calm and flexible attitudes and movements in arranging both hands in handling toggles against each glider's movements; Keep the steering line tension in position forming a line perpendicular to the canopy unit, within the specified time; Arrange down and re-tighten the steering line followed by the return to its original position and display the ups and downs of the arms (hands up-down) naturally and calmly; Repeating point 4) steadily according to the specified stage; Lower the glider calmly and steadily by preparing the front legs back (steps form) to put the foot back on the ground while keeping the line tense; Firmly maintain body positioning awaiting reversal instructions and relax the line unit until the glider touches the ground again.

The results of a limited trial carried out by involving lecturers and student groups totaling 3 people from the 4th randomly selected study group, show the conventional form of lectures that have been used daily, with some adjustments carried out based on suggestions and previous session notes then the next learning plan is as expected, the learning process can develop towards the demands of the learning model in solving lecture barriers can already be noted, although adjusted again with new findings.

The results of a wider trial are the process of developing a model conducted by researchers with the involvement of lecturers and students as research subjects with a greater number of 20 students, carrying out new procedures according to the refinement of the limited trial results. The results of trials at this stage are in the good approach approaching satisfactory, both the initial stage to the final stage by showing a significant effect on the results of student lectures. This is evidenced by field data that students in mastering lecture material on daily preparation skills, ground handling, take-off integration with low flight and landing techniques have shown an increase compared to the beginning of the lecture evenly, although there are some students with low ability in flexibility (not flexible) to increase learning outcomes is not the same as a group of students who have flexibility in moving.

#### IV. CONCLUSION

Based on the results and discussion of the research, it can be concluded that the design of the learning model planning by designing a paragliding Rapid Learning Engineering (RLE) model with automatic engine assembly-based launcher which has been formulated has several objectives namely related to the lecturing process which includes apperception, exploration, discussion and concept explanation, application development and interim conclusions; the ability to construct new knowledge; while the implementation of this learning model is the implementation of the lecture plan carried out to jointly study the competencies that have been determined, which are formulated in the Paragliding Sports field lecture scenarios which include the main activities of carrying out the opening session for the preparation of lectures (brainstorming, warming up, quiz, recalling apparatus and daily procedures); 4) the core of the lecture; 5) closing lectures (closing session). Evaluations carried out include evaluating the process and results. Process evaluation functions to get information about capacity building. Evaluation of the results is used to obtain information about the ability of students to master lecture material. The development of learning models is emphasized in the process of improving the stages of learning and efforts to improve the paragliding collective ability from daily

preparation, ground handling, integration of takeoff with flight to safety in landing. Specifically it can be stated that the design of learning model planning by designing paragliding Rapid Learning Engineering (RLE) models with automatic engine assembly-based launchers can improve the effectiveness of Paragliding lectures at the University.

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