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Development of Motivation Scale for Students in Problem-Based Learning Model

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Abstract: This study aims to develop an instrument for measuring students' learning motivation in the Problem-Based Learning (PBL) setting as one of the indicators of the success of teaching methods in higher education. The method used was Research and Development following the steps outlined by Plomp & Nieveen (2013). The scale development process followed the DeVellis model. Data analysis in this study included content analysis measured using S-CVI, construct analysis measured using product moment, and reliability analysis measured using Cronbach's alpha. Content validity was assessed by 4 experts, while construct validity was assessed with a sample size of 312 participants. The developed scale comprises 25 valid and reliable items and meets aspects of relevance, accuracy, and practicality. Therefore, this instrument can be utilized to measure students' learning motivation in problem-based learning contexts. There are four aspects measured through this instrument: *choice of task, effort, persistence, and achievement.*

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Introduction

Motivation in learning is a fundamental aspect of the educational process as it drives individuals forward in their acquisition of knowledge and skills (Chen, 2017). Tang (2022) asserts that learning motivation is an important internal drive that guides students' learning activities. Without sufficient learning motivation, learning can become tedious and educational goals may remain unattainable. Furthermore, differences in learning motivation will inevitably affect learning outcomes for each individual. Therefore, it is crucial to understand the urgency of learning motivation for educators, parents, and students themselves (Filgona et al., 2020).

Additionally, Hafizoglu & Yerdelen (2019) add that learning motivation is a key factor in creating a productive learning environment. One of the primary dimensions of learning motivation is intrinsic motivation, which arises from a genuine interest or passion for a particular subject or activity. Augustyniak et al., (2016) further note that when learners have intrinsic motivation, they are driven by curiosity and enjoyment of the learning process itself, rather than by external rewards or pressure. In contrast, extrinsic motivation stems from external factors such as grades, praise, or tangible rewards. Although extrinsic motivation may be effective in the short term, it may not sustain a love for learning in the long term (Liu et al., 2020). Shin et al., (2018) in their research state that students who are intrinsically motivated are driven by an inner desire to learn and grow, thus tend to achieve good outcomes in learning. Among various learning approaches, problem-based learning (PBL) has garnered attention as a potential method to significantly stimulate students' learning motivation (Fukuzawa et al., 2017).

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PBL, known for its emphasis on real-world problem-solving as the basis of learning (Heong et al., 2020), involves a systematic shift of the educator's role to the learner (Trullas et al., 2022). This means individuals actively engage in the learning process, practicing and mastering various skills. Those actively engaged in this learning process are guided, mentored, and monitored by instructors in the classroom. Instructors have the task of presenting problems that will be responded to by students, both individually and in groups. The systematic nature of PBL is based on solving either simulated or real-life problems, which tend to be generally unstructured and open (Kumar & Kogut, 2006).

PBL is an instructional method centered on students, aiming to stimulate motivation. Wijnen et al., (2018) argue that one specific goal of PBL is to cultivate intrinsic motivation in students. The PBL method is recommended to enhance learning motivation because active collaboration occurs to investigate and discuss the raised issues. The premise is that the more students are involved in discussions, the greater their motivation to demonstrate themselves and seek learning resources for discussion (Fukuzawa et al., 2017).

The description of learning motivation and PBL above illustrates the importance of developing students' learning motivation through PBL conducted by educators. One way to assess the level of student learning motivation in PBL is by using instruments. Apart from being used to determine the initial level of student learning motivation, these instruments also serve to measure the success of PBL in relation to student learning motivation. Therefore, the development of a learning motivation scale appropriate to the PBL context can assist educators in monitoring and measuring student motivation levels more accurately and identifying areas that need further attention.

Until now, there have been developments of learning motivation scales for students, including adolescents and university students; however, these developments have primarily focused on learning motivation in general rather than within the context of PBL. For instance, Anugraheni et al., (2019) developed a learning motivation scale for adolescents, specifically high school students, which focused solely on one variable: learning motivation, without specifying its sources. Subsequently, Sudibyo et al., (2017) developed a questionnaire on physics learning motivation aimed at students in physics education, yet without referring to any particular teaching approach. Similarly, Yuniarto (2017) developed a learning motivation instrument for mathematics education students, specifically those in basic physics courses, without connecting it to any specific teaching approach. In contrast to these previous developments, this research aims to measure learning motivation within the context of PBL. This is considered crucial as educators are required to optimize student competencies through their chosen teaching approaches, particularly in PBL.

Developing a learning motivation scale within the context of PBL can provide valuable insights into what motivates students to actively engage in problem-based learning. This may assist educators in identifying aspects that can enhance or hinder student learning motivation and in designing strategies or approaches to create a more supportive learning environment. With a better understanding of learning motivation aspects in PBL, educators can design more relevant and optimal learning experiences for their students. Therefore, this research aims to produce an instrument for measuring student learning motivation within the context of problem-based learning (PBL) as a benchmark for the success of teaching methods in higher education.

Research Method

This research method uses research and development using educational design research. According to Plomp & Nieveen (2013), "educational design research is a research

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design appropriate to develop research-based solutions to complex problems in educational practice or to develop or validate theories about learning processes, learning environments and the like."

This study was carried out through three main stages following Plomp and Nieveen: (1) *Preliminary research, (2) Prototyping stage, and (3) Assessment phase*. Each stage is described as follows:

(1) *Preliminary research*

In this stage, we collected data related to students' learning motivation. We found that students' learning motivation varied when PBL was applied.

(2) *Prototyping Stage*

In this stage, we developed the instrument based on theoretical concepts. Specifically, we crafted a learning motivation instrument for students engaged in the problem-based learning model, intended for students in teacher education faculties (prospective teachers). In this prototyping phase, the researcher ensured the incorporation of relevant aspects of learning motivation. To construct the prototype instrument, the researcher followed DeVellis's model (2017) for scale development,

which included the following proceduresDeVellis (2017):

1) Determining the aims of Measure, initially defining what is being measured. When establishing objectives, it is necessary to basing measurements on substantive theory (developed in specific and limited areas).
2) Generating an Item Pool, where developers prepare to create the instrument. It is important to ensure that items created reflect measurement goals or are aligned with what is being measured. Attention is also given to the number of items produced and the use of favorable or unfavorable items.
3) Determining the Format for Measurement, the third step involves determining the format to be used by the developer.
4) Having the Initial Item Pool Reviewed by Experts, the fourth step entails seeking assistance from experts who possess extensive knowledge to review and evaluate the items already prepared. This includes assessing content validity.
5) Considering Inclusion of Validation Items, the inclusion of validation items comprises items whose validity has already been tested.
6) Administering Items to a Development Sample, after the items have been tested for construct validity and validated items included, the developer manages items considering the sample size.
7) Evaluating the Items, after the initial item pool has been developed, scrutinized, and tested on a large and representative sample, the next step is to evaluate each item until the expected items suitable for scale formation are identified.
8) Optimizing Scale Length, the final step involves obtaining a set of items with acceptable reliability.

(3) *Assessment phase*

In the Assessment Phase, content validity and construct validity tests were conducted. Content validity test was carried out with guidance and counseling experts, while construct validity testing was conducted with a sample of students. The instrument's adequacy based on expert input considered three aspects: relevance, accuracy, and practicality (Plomp & Nieveen, 2013). The instrument's adequacy based on user feedback was analyzed using the Content Validity Index (CVI) for each aspect (Lawshe, 1975; Lynn M. R., 1986; Polit & Beck, 2006).

The content validity assessment involved four Guidance and Counseling experts who met the following criteria: holding a minimum master's degree in guidance and counseling and being competent in scale development. The construct validity assessment involved 312 students from the Faculty of Teacher Training and Education (FKIP) at Universitas Sebelas Maret (UNS).

Data were collected using expert assessment questionnaires. Experts rated each item using a Likert scale, a fundamental psychometric tool commonly used in educational and social science research. (Beglar & Nemoto, 2014;Joshi et al., 2015Spenner, 1990). The alternative responses include 1 (strongly irrelevant), 2 (less relevant), 3 (relevant) and 4 (strongly relevant) Each statement item was rated on a four-point scale based on three criteria: relevance, accuracy, and practicality (Plomp & Nieveen, 2013).

The results of the instrument's content validation by the four experts were divided into three aspects: relevance, accuracy, and practicality. These results were then processed and calculated using the Content Validity Index (CVI). The CVI was calculated based on the values provided by the four guidance and counseling experts using a four-point Likert scale interpretation, where 1 signifies "not suitable at all," 2 "not suitable," 3 "suitable," and 4 "highly suitable." Subsequently, the ordinal scale was converted into a dichotomous value of 0 and 1 to be processed using the CVI approach. Ordinal scales 1 and 2 were categorized as 0, while ordinal scales 3 and 4 were categorized as 1 (Polit & Beck, 2006).

Results and Discussion

The results of this study are presented in accordance with the stages of development outlined by Plomp & Nieveen (2013) as follows:

(1) ***Preliminary Research***

The preliminary research phase was conducted through observation. When the researcher implemented PBL in the lecturing process, students exhibited behaviors such as chatting, using their mobile phones, sleeping, or working on other tasks. These behaviors indicated low learning motivation. Some students, however, were observed to actively listen to explanations, earnestly work on cases, and actively engage in discussions with their groups. However, the level of learning motivation could not be precisely measured due to the lack of specific measurement tools related to learning motivation in PBL, particularly for students.

(2) ***Prototyping Stage***

The prototyping stage involved the development of the instrument. The aspects used in this instrument's development were derived from Schunk et al., (2014), comprising 1) choices of task, 2) efforts, 3) persistence, and 4) achievement. Below is the blueprint description of the learning motivation instrument.

Table 1. Instrument Blueprint

No	Aspects	Indicator	Item
1	Choice of tasks	Reward for completing tasks	3 item
		Enthusiasm in completing tasks	3 item
2	Effor	Activeness in Classroom	3 item
		Developing skills	3 item
3	Persistence	Time needed to comprehend	3 item
		Frequency of trying out solutions	3 item
4	Achievement	Material comprehension	3 item
		Score gained	4 item
		Total item	25 item

(3) ***Assessment phase***

The assessment phase was conducted using Content Validity Index (CVI) analysis. The data were analyzed based on input from four content experts, focusing on three aspects: relevance, accuracy, and practicality. In addition to content validity testing by experts, construct validity testing was also performed on a sample of students. The following is a description of the results of the content validity and construct validity analyses.

Table 2. CVI Results for Relevance

No. Item	Number Agreement	I-CVI	Category	Number Agreement	I-CVI	Category	Number Agreement	I-CVI	Category
	Relevance			Accuracy			Practicality		
1	4	1.00	Relevant	4	1.00	Relevant	4	1.00	Relevant
2	4	1.00	Relevant	4	1.00	Relevant	4	1.00	Relevant
3	4	1.00	Relevant	4	1.00	Relevant	4	1.00	Relevant
4	4	1.00	Relevant	4	1.00	Relevant	4	1.00	Relevant
5	4	1.00	Relevant	4	1.00	Relevant	4	1.00	Relevant
6	4	1.00	Relevant	4	1.00	Relevant	4	1.00	Relevant
7	4	1.00	Relevant	4	1.00	Relevant	4	1.00	Relevant
8	4	1.00	Relevant	4	1.00	Relevant	4	1.00	Relevant
9	4	1.00	Relevant	4	1.00	Relevant	4	1.00	Relevant
10	4	1.00	Relevant	4	1.00	Relevant	4	1.00	Relevant
11	4	1.00	Relevant	4	1.00	Relevant	4	1.00	Relevant
12	4	1.00	Relevant	4	1.00	Relevant	4	1.00	Relevant
13	4	1.00	Relevant	4	1.00	Relevant	4	1.00	Relevant
14	4	1.00	Relevant	4	1.00	Relevant	4	1.00	Relevant
15	4	1.00	Relevant	4	1.00	Relevant	4	1.00	Relevant
16	4	1.00	Relevant	4	1.00	Relevant	4	1.00	Relevant
17	4	1.00	Relevant	4	1.00	Relevant	4	1.00	Relevant
18	4	1.00	Relevant	4	1.00	Relevant	4	1.00	Relevant
19	4	1.00	Relevant	4	1.00	Relevant	4	1.00	Relevant
20	4	1.00	Relevant	4	1.00	Relevant	4	1.00	Relevant
21	4	1.00	Relevant	4	1.00	Relevant	4	1.00	Relevant
22	4	1.00	Relevant	4	1.00	Relevant	4	1.00	Relevant
23	4	1.00	Relevant	4	1.00	Relevant	4	1.00	Relevant
24	4	1.00	Relevant	4	1.00	Relevant	4	1.00	Relevant
25	4	1.00	Relevant	4	1.00	Relevant	4	1.00	Relevant

Content validity testing using the CVI approach was conducted by calculating the validity of each statement item (I-CVI) and the content validity of all items (S-CVI). The I-CVI was obtained by dividing the number of items that received a rating of 1 by the total number of raters. Subsequently, the S-CVI was calculated by averaging the I-CVI scores. The study is considered relevant if it achieves a minimum CVI value of 1.00 with 3-5 raters (Lynn M. R., 1986; Polit & Beck, 2006).

As shown in Table 1, the results showed an I-CVI of 1.00 for relevance, 1.00 for accuracy, and 1.00 for practicality. Meanwhile, the S-CVI value for all three aspects was 1.00. The acceptance criteria for CVI by 4 experts are at least 1.00 (Lynn M. R., 1986; Polit

& Beck, 2006). Therefore, it can be concluded that the validation results and the calculated I-CVI for each aspect and S-CVI were considered relevant. Furthermore, interpreted results of the content validity indicate that the development of the Learning Motivation Scale for Students in Problem-Based Learning (PBL) Model is valid or relevant.

Construct validity results, calculated using SPSS 27 with product moment, indicated significant validity for all 25 statement items. The instrument is considered valid if the significance value is < 0.05 (Ghozali, 2007). Consistent with this, Azwar (2000) states that if the index value falls within the range of 0.4 - 0.8, then the instrument is considered to have moderate validity. The results of the validity test can be seen in the following table, where 24 instruments obtained a value of 0.000 < 0.05 and 1 instrument obtained a value of 0.008 < 0.05. Below are the results of the construct validity test for the learning motivation scale instrument for students in problem-based learning model.

Table 3. Construct validity test result

Correlations				Correlations			
			Category				Category
VAR00001	Sig. (2-tailed)	0.000	Valid	VAR00014	Sig. (2-tailed)	0.000	Valid
VAR00002	Sig. (2-tailed)	0.008	Valid	VAR00015	Sig. (2-tailed)	0.000	Valid
VAR00003	Sig. (2-tailed)	0.000	Valid	VAR00016	Sig. (2-tailed)	0.000	Valid
VAR00004	Sig. (2-tailed)	0.000	Valid	VAR00017	Sig. (2-tailed)	0.000	Valid
VAR00005	Sig. (2-tailed)	0.000	Valid	VAR00018	Sig. (2-tailed)	0.000	Valid
VAR00006	Sig. (2-tailed)	0.000	Valid	VAR00019	Sig. (2-tailed)	0.000	Valid
VAR00007	Sig. (2-tailed)	0.000	Valid	VAR00020	Sig. (2-tailed)	0.000	Valid
VAR00008	Sig. (2-tailed)	0.000	Valid	VAR00021	Sig. (2-tailed)	0.000	Valid
VAR00009	Sig. (2-tailed)	0.000	Valid	VAR00022	Sig. (2-tailed)	0.000	Valid
VAR00010	Sig. (2-tailed)	0.000	Valid	VAR00023	Sig. (2-tailed)	0.000	Valid
VAR00011	Sig. (2-tailed)	0.000	Valid	VAR00024	Sig. (2-tailed)	0.000	Valid
VAR00012	Sig. (2-tailed)	0.000	Valid	VAR00025	Sig. (2-tailed)	0.000	Valid
VAR00013	Sig. (2-tailed)	0.000	Valid				

After conducting the construct validity test, the instrument was then subjected to reliability test. This reliability test was performed to assess the consistency of the instrument, ensuring that consistent results are obtained when the instrument is used. An instrument is considered reliable if the obtained value is greater than 0.60 (Ghozali, 2007); the same opinion is also expressed by Yusup (2018), categorizing instruments as reliable if they obtain a value > 0.60. Reliability test was analyzed using Cronbach's alpha with SPSS. Below are the results of the instrument's reliability test.

Table 4. Reliability Test Result

Reliability Statistics	
Cronbach's Alpha	N of Items
0.905	25

The obtained result indicates a Cronbach's alpha value of 0.905 > 0.60. Therefore, it can be concluded that the learning motivation scale instrument for students in the problem-based learning model is reliable.

Discussion

Learning motivation is an essential internal drive that guides students' learning activities (Tang, 2022). It plays a crucial role in the learning process, as motivation compels individuals to learn diligently to achieve learning goals (Sugiyanto et al., 2020). Learning motivation comprises intrinsic and extrinsic motivation. Extrinsic motivation involves external factors such as grades and rewards, while intrinsic factors include academic interest, competence, and relevance (Douglass & Morris, 2014). The Problem-Based Learning (PBL) model has garnered attention as a potential method to significantly stimulate students' learning motivation (Fukuzawa et al., 2017).

PBL is a learning method where relevant problems are presented to students at the beginning of the learning process, which are then used as the context and motivation for subsequent learning (Prince, 2004). Argaw et al., (2017) stated that PBL is considered an excellent alternative learning method for improving students' academic achievement. Through PBL, students collaboratively take responsibility for solving relevant problems in their field, thereby stimulating intrinsic motivation (Fukuzawa et al., 2017).

The results of this study reflect the importance of developing a learning motivation scale instrument within the PBL framework. The items in the instrument were structured based on indicators to assess students' learning motivation in the context of PBL, which were then validated to determine the validity of the items. Initially, there were 25 items in the instrument, and after conducting content validity testing, it was found that the items were relevant, with an S-CVI of 1.00 as indicated by the four guidance and counseling experts, signifying the relevance of all items. The validity test result also relies upon validators' views, which could be reflected in the analysis process (Iskandar & H, 2017). This indicates that the 25 items that have undergone content validity testing by four experts received positive and valid feedback.

Once deemed valid based on content validity testing, construct validity testing is conducted The construct validity test of the instrument was conducted by involving 312 students from the Faculty of Teacher Training and Education (FKIP) at UNS. The results of the construct validity test showed that all 25 items were valid based on product moment analysis. Subsequently, a reliability test was conducted using Cronbach's alpha with SPSS, resulting in a coefficient of 0.905, indicating that the 25 items are reliable. Based on the content validity, construct validity, and reliability tests, it can be concluded that the learning motivation instrument for students in the problem-based learning (PBL) model is a valid and reliable measurement tool for use.

The findings of this research illustrate an instrument that can be utilized by researchers to uncover students' learning motivation in the problem-based learning (PBL) model. By measuring students' learning motivation in PBL, we can determine the level of enthusiasm students have when participating in the problem-based learning model. Previous studies have shown that PBL has significantly positive effects on students' motivation to attend and participate in course tasks. The results of this study contribute to educational science by providing a reference instrument for measuring students' learning motivation in the problem-based learning (PBL) model. This research outcome can also be utilized by instructors to assess the level of students' learning motivation in the PBL learning process and can be correlated with other variables.

Conclusion

This study has produced a scale of learning motivation in problem-based learning (PBL) comprising 25 valid and reliable items. The instrument was developed to measure students' motivation in problem-based learning (PBL). There are four aspects measured through this instrument: *choice of task, effort, persistence, and achievement.* The validity of the content was measured using S-CVI, while construct validity was tested using SPSS, and reliability was assessed using Cronbach's alpha. The instrument is now ready for use.

Recommendation

For instructors, they can utilize this instrument to assess the level of students' learning motivation in the PBL learning model. For students, this instrument can be used to enhance learning motivation through the PBL model based on the measurement results. For future researchers, this study can be used as one of the variables that can be compared with other variables to determine relationships, influences, comparisons, correlations, or the effectiveness of a learning model.

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References

Anugraheni, A. R., Seprina, C. A., Paramitasari, S. P., Vionita, V. K., & Husna, A. N. (2019). Skala motivasi belajar: konstruksi dan analisis psikometri. *Proceeding of The URECOL*, *1*(10), 66–69. http://repository.urecol.org/index.php/proceeding/article/view/642

Argaw, A. S., Haile, B. B., Ayalew, B. T., & Kuma, S. G. (2017). The Effect of Problem Based Learning (PBL) Instruction on Students' Motivation and Problem Solving Skills of Physics. *Eurasia Journal of Mathematics, Science and Technology Education*, *13*(3), 857–871. https://doi.org/10.12973/eurasia.2017.00647a

Augustyniak, R. A., Ables, A. Z., Guilford, P., Lujan, H. L., Cortright, R. N., & DiCarlo, S. E. (2016). Intrinsic Motivation: An Overlooked Component for Student Success. *Advances in Physiology Education*, *40*(4), 465–466. https://doi.org/10.1152/advan.00072.2016

Azwar, S. (2000). *Penyusunan Skala Psikologi*. Pustaka Pelajar.

Beglar, D., & Nemoto, T. (2014). Developing Likert-scale questionnaires. *JALT2013 Conference Proceedings*, 1–8.

Chen, Y. C. (2017). Empirical Study on The Effect of Digital Game-Based Instruction on Students' Learning Motivation and Achievement. *Eurasia Journal of Mathematics, Science and Technology Education*, *13*(7), 3177–3187. https://doi.org/10.12973/eurasia.2017.00711a

DeVellis, R. F. (2017). Scale Development: Theory and Applications. In *Scale development: Theory and applications.* Sage Publications, Inc.

Douglass, C., & Morris, S. R. (2014). Student Perspectives On Self-Directed Learning. *Journal of the Scholarship of Teaching and Learning*, *14*(1), 13–25. https://doi.org/10.14434/josotl.v14i1.3202

Filgona, J., Sakiyo, J., Gwany, D. M., & Okoronka, A. U. (2020). Motivation in Learning. *Asian Journal of Education and Social Studies*, *10*(4), 16–37. https://doi.org/10.9734/ajess/2020/v10i430273

Fukuzawa, S., Boyd, C., & Cahn, J. (2017). Student Motivation in Response to Problem-

Based Learning. *Collected Essays on Learning and Teaching*, *10*, 175–188. https://doi.org/10.22329/celt.v10i0.4748

Ghozali, I. (2007). *Aplikasi Analisis Multivariate Dengan Program SPSS* (4th ed.). Universitas Diponegoro.

Hafizoglu, A., & Yerdelen, S. (2019). The Role of Students' Motivation in the Relationship Between Perceived Learning Environment and Achievement in Science: A Mediation Analysis. *Science Education International*, *30*(4), 251–260. https://doi.org/10.33828/sei.v30.i4.2

Heong, Y. M., Hamdan, N., Ching, K. B., Kiong, T. T., & Azid, N. (2020). Development of Integrated Creative and Critical Thinking Module in Problem-Based Learning to Solve Problems. *International Journal of Scientific and Technology Research*, *9*(3), 6567–6571.

Iskandar, A., & H, M. R. (2017). Item Quality Analysis Instrument in the College Entrance Test in the View of the Expert Validator. *International Conference ADRI*.

Joshi, A., Kale, S., Chandel, S., & Pal, D. (2015). Likert Scale: Explored and Explained. *British Journal of Applied Science & Technology*, *7*(4), 396–403. https://doi.org/10.9734/bjast/2015/14975

Lawshe, C. H. (1975). A Quantitative Approach To Content Validity. *Personnel Psychology*, *28*(4), 563–575. https://doi.org/10.1111/j.1744-6570.1975.tb01393.x

Liu, Y., Hau, K. T., Liu, H., Wu, J., Wang, X., & Zheng, X. (2020). Multiplicative Effect of Intrinsic and Extrinsic Motivation on Academic Performance: A Longitudinal Study of Chinese Students. *Journal of Personality*, *88*(3), 584–595. https://doi.org/10.1111/jopy.12512

Lynn M. R. (1986). Determination and quantification of content validity. In *Nursing Research* (Vol. 35, Issue 6, pp. 382–386). http://ijoh.tums.ac.ir/index.php/ijoh/article/view/26

Plomp, T., & Nieveen, N. (2013). Educational Design Research Educational Design Research. *Netherlands Institute for Curriculum Development: SLO*, 1–206.

Polit, D. F., & Beck, C. T. (2006). The Content Validity Index: Are You Sure You Know What's Being Reported? Critique and Recommendations. *Research in Nursing & Health*, *29*, 489–497. https://doi.org/10.1002/nur

Prince, M. (2004). Does Active Learning Work? A Review of the Research. *Journal of Engineering Education*, *93*(3), 223–231. https://doi.org/10.1002/j.2168-9830.2004.tb00809.x

Schunk, D., Meece, J., & Pintrich, P. (2014). Motivation in Education Theory , Research and Applications. In *Pearson Education Limited*.

Shin, J., Kim, M. S., Hwang, H., & Lee, B. Y. (2018). Effects of Intrinsic Motivation and Informative Feedback in Service-Learning on The Development of College Students' Life Purpose. *Journal of Moral Education*, *47*(2), 159–174. https://doi.org/10.1080/03057240.2017.1419943

Spenner, K. I. (1990). Skill: Meanings, Methods, and Measures. *Work and Occupations*, *17*(4), 399–421. https://doi.org/10.1177/0730888490017004002

Sudibyo, E., Jatmiko, B., & Widodo, W. (2017). Pengembangan Instrumen Motivasi Belajar Fisika: Angket. *Jurnal Penelitian Pendidikan IPA*, *1*(1), 13. https://doi.org/10.26740/jppipa.v1n1.p13-21

Sugiyanto, Badaruddin, M., Herpratiwi, Untung, S., & Sabarudin. (2020). The Influence of Learning Motivation On The Learning Outcomes of Vocational Students at Lampung University. *International Journal of Advanced Science and Technology*, *29*(5), 133–

Vol. 10, No. 1 : March 2024
E-ISSN: 2442-7667
pp. 147-156
Email: jklppm@undikma.ac.id

140.

Tang, S. (2022). Investigation on the Learning Motivation Level of Chinese College Students in Higher Vocational Colleges. *Proceedings of the 2022 International Conference on Social Sciences and Humanities and Arts (SSHA 2022)*, *653*(Ssha), 536–539. https://doi.org/10.2991/assehr.k.220401.102

Wijnen, M., Loyens, S. M. M., Wijnia, L., Smeets, G., Kroeze, M. J., & Van der Molen, H. T. (2018). Is Problem-Based Learning Associated with Students' Motivation? A Quantitative and Qualitative Study. *Learning Environments Research*, *21*(2), 173–193. https://doi.org/10.1007/s10984-017-9246-9

Yuniarto, E. (2017). Pengembangan Instrumen Penilaian Motivasi Belajar Mahasiswa Pendidikan Matematika. *Jurnal Likhitaprajna*, *19*(2), 1–8. http://likhitapradnya.wisnuwardhana.ac.id/index.php/likhitapradnya/article/view/63

Yusup, F. (2018). Uji Validitas dan Reliabilitas Instrumen Penelitian Kuantitatif. *Jurnal Tarbiyah: Jurnal Ilmiah Kependidikan*, *7*(1), 17–23.