The MASTER (Motivating, Acquiring, Searching, Triggering, Exhibiting, Reflecting) Learning Model Based on Edutainment and Motivation: the Impact and Interaction on Mathematical Connections Skills

Suparti*  
Universitas Islam Negeri Raden Intan  
Lampung, INDONESIA

Netriwati  
Universitas Islam Negeri Raden Intan  
Lampung, INDONESIA

**Article Info**

**Article history:**
Received: March 11, 2021  
Revised: May 19, 2021  
Accepted: May 24, 2021

**Keywords:**  
MASTER, Edutainment, Mathematical Connection, Learning Motivation.

**Abstract**

This study aimed to determine 1) the influence application of the MASTER learning model (Motivating, Acquiring, Searching, Triggering, Exhibiting, and Reflecting) based on Edutainment on students’ mathematical connection skills in terms of learning motivation; 2) the influence of students’ learning motivation on mathematical connection skills; and 3) the interaction between the groups of learning models (MASTER and Conventional) and the groups of learning motivation (high, moderate, and low) on students’ mathematical connection skills. A quantitative research method with a quasi-experimental design was used in this study. The sample of the study was determined using cluster random sampling. The hypothesis was tested using two ways analysis of variance of unequal cells, provided that the data must be normally distributed and homogeneous. The results of the study show that 1) there was an influence of the MASTER learning model based on Edutainment on mathematical connection skills; 2) there was an influence of learning motivation on mathematical connection skills; and (3) there was no interaction between the groups of learning model (MASTER and Conventional) and the groups of learning motivation (high, moderate, and low) on mathematical connection skills.

**INTRODUCTION**

Mathematics is a global knowledge that underlies the development of science and technology. It plays a vital role in various disciplines and advances the human mindset to solve life problems (Abdullah et al., 2019; Assidiqi, 2015; Indriani & Imanuel, 2018). National Council of Teachers of Mathematics (NCTM) states that mathematics in the classroom must consider five mathematical skills: connections, reasoning, problem-solving, communications, and representation (NCTM, 2000). The statement indicates that mathematical connection is an essential part of mathematical ability that students must master.

Mathematical connection skills can find relationships between concepts and procedures, understand various mathematical topics, and apply them in other fields or everyday lives (Isnaeni et al., 2019; Siagian, 2016; Widarti, 2013). Students must first master this skill in learning mathematics because mathematics is an interrelated science (Anita, 2014; Fauzi, 2011; Widayawati, 2016). Poor connection skills mastery will negatively impact problem-solving abilities (Masitoh, 2016) and learning outcomes (Zahwa 2020). Utilizing context conditions in learning mathematics makes abstract concepts easy to understand and can be connected based on the initial knowledge that students already have. One learning model with these characteristics is the MASTER learning model (Motivating, Acquiring, Searching, Triggering, Exhibiting, and Reflecting).

The MASTER learning model is part of Accelerated Learning which aims to make classroom learning activities more enjoyable (Ifda, 2015; Martinah et al., 2019; Putri et al., 2013; Zulfikar, 2017). Accelerated Learning is an effort made by students in groups to understand a concept quickly. This learning model requires students to understand the process of a concept so that there is a balance
between process and product in learning (Anggreni, Dantes, and Candiasa 2014). Maximizing the application of this learning model is expected to improve students’ low mathematical connection skills. One way to achieve it is to combine the MASTER model with Edutainment. The essence of Edutainment is the mastery of learning material by inserting entertainment (Oza & Zaman, 2016) so that learning takes place in a conducive and fun atmosphere (Santoso, 2018; Sianturi, 2014). Besides applying learning models that are considered to harm students’ mathematical connection skills, the students’ motivational factors in learning are also essential to investigate.

Learning motivation is one of the factors that affect a student’s learning outcomes (Lestari, 2017). Good motivation in learning will provide harmony between physical and psychological aspects during the learning process. It will encourage student’s enthusiasm for learning and affect student learning outcomes (Nurmala et al., 2014). Therefore, teachers must have the ability to develop students’ learning motivation.

Relevant studies on the use of the MASTER learning model found that this learning affected learning outcomes (Anggreni et al., 2014; Ifda, 2015), critical thinking (Putri et al., 2013), reflective thinking (Zulfikar, 2017), mathematical literacy (Martinah et al., 2019), and mathematical concept understanding (Kastira, 2019). Likewise, research with learning motivation variables found that motivation affected learning outcomes (Darmawati 2017; Hamdu and Agustina 2011; Nurlaili and Febrina 2018; Nurmala, Tripalupi, and Suharsono 2014) and students’ life skills (Kiswoyowati, 2011).

This study proposed combining the MASTER learning model based on the Edutainment approach and its interaction with learning motivation on students’ mathematical connection skills.

**METHOD**

This study employed the quantitative approach because the data had been collected numerically. Statistical testing was used to process the data and the hypothesis. The quasi-experimental design was applied in this study because not all influential external variables will be seen. The instruments used in this research were mathematical connection skills test instruments and student learning motivation questionnaires. The research used the 4×3 factorial posttest only control group design. The summary is shown in table 1:

| Learning Models          | Learning Motivation | Learning Motivation | Learning Motivation |
|-------------------------|---------------------|---------------------|---------------------|
| MASTER + Edutainment (A₁) | A₁B₁                | A₁B₂                | A₁B₃                |
| MASTER (A₂)              | A₂B₁                | A₂B₂                | A₂B₃                |
| Conventional + Edutainment (A₃) | A₃B₁          | A₃B₂                | A₃B₃                |
| Conventional (A₄)        | A₄B₁                | A₄B₂                | A₄B₃                |

Information: AᵢBⱼ = Groups of Mathematical Connection skills and learning model (i-th) and the learning motivation (j-th). i = 1,2,3,4, j = 1,2,3

The collected data was then tested using the normality test and the homogeneity test as a condition for the two-way ANOVA test. If the two-way ANOVA test finds that H₀ is rejected, then the test will be followed by the Scheffe test to see which group poses the best impact on students’ mathematical connection skills.

**RESULTS and DISCUSSION**

The instruments were appropriate to be used based on the validity test results, reliability test, level of difficulty analysis, and discriminating index. Furthermore, the learning motivation questionnaire had also been tested (validity and reliability) so that it was feasible to be used. Below is the summary of the average marginal overall data:

| Groups          | High motivation | Moderate motivation | Low motivation | Mean marginal |
|-----------------|-----------------|---------------------|----------------|---------------|
| Experimental 1  | 94.67           | 73.59               | 53.34          | 73.86666667   |
| Experimental 2  | 85.71           | 67.11               | 48.89          | 67.23666667   |
| Experimental 3  | 82.22           | 71.11               | 53.94          | 69.09         |
| Control         | 73.33           | 58.98               | 41.03          | 57.78         |
| Average         | 83.9825         | 67.6975             | 49.3           | 66.99333333   |
The results of the normality and homogeneity test are summarized in table 3 and table 4.

### Table 3. The Results of the Normality Test (Kolmogorov-Smirnov)

| Groups     | Statistics | Kolmogorov-Smirnov | Sig. |
|------------|------------|--------------------|------|
| Experimental 1 | .141       | 38                 | .053 |
| Experimental 2 | .133       | 28                 | .200*|
| Experimental 3 | .152       | 32                 | .059 |
| Control    | .138       | 31                 | .138 |

* This is a lower bound of the true significance.

a. Lilliefors Significance Correction

### Table 4. The Results of the Homogeneity Test (Bartlet Test)

| Test of Homogeneity of Variance | Levene Statistic | df1 | df2 | Sig. |
|---------------------------------|-----------------|-----|-----|------|
| Based on Mean                   | .639            | 3   | 125 | .591 |
| Based on Median                 | .530            | 3   | 125 | .663 |
| Based on Median and with adjusted df | .530        | 3   | 124.803 | .663 |
| Based on trimmed mean           | .617            | 3   | 125 | .605 |

Based on Table 3 and Table 4, it can be concluded that all sample groups came from normally distributed populations and each group (learning model and learning motivation) had homogeneous variance. Next, a two-way ANOVA test was carried out to see the effect differences on each group. The test results are displayed in Table 5.

### Table 5. The Results of the Two-Way ANOVA

| Source                  | Type III Sum of Squares | Df | Mean Square | F    | Sig. |
|-------------------------|-------------------------|----|-------------|------|------|
| Corrected Model         | 27671.284a              | 11 | 2515.571    | 11.327 | .000 |
| Intercept               | 434122.981              | 1  | 434122.981  | 1954.764 | .000 |
| Learning Model (A)      | 3188.419                | 3  | 1062.806    | 4.786 | .004 |
| Learning Motivation (B) | 15765.154               | 2  | 7882.577    | 35.494 | .000 |
| Model * Motivation (A × B) | 439.853            | 6  | 73.309      | .330  | .920 |
| Error                   | 25983.895               | 117| 222.085     |       |      |
| Total                   | 640396.668              | 129|             |       |      |
| Corrected Total         | 53655.179              | 128|             |       |      |

a. R Squared = .516 (Adjusted R Squared = .470)

Table 4 shows that the two-way ANOVA test with a significant level of 0.05 obtained the following results:

a) \( H_{0A}: \alpha_i = 0 \) where \( \text{sig} = 0.004 \leq 0.05 = \alpha \), which means that \( H_{0A} \) is rejected. This means that there is an influence of the MASTER learning model based on Edutainment on students' mathematical connections skills. A multiple comparison test (Scheffer test) is needed to see the effect differences between each learning model group.

b) \( H_{0B}: \beta_i = 0 \) where \( \text{sig} = 0.000 \leq 0.05 = \alpha \), which means that \( H_{0B} \) is rejected. This means that there is an influence of learning motivation on students' mathematical connections skills. A multiple comparison test (Scheffer test) is needed to see the effect differences between each learning motivation group.

c) \( H_{0C}: (\alpha\beta) = 0 \) where \( \text{sig} = 0.920 > 0.05 = \alpha \), which means that \( H_{0AB} \) is accepted. This means no interaction between the MASTER learning model, the Edutainment method, and the learning motivation on students' mathematical connection skills. It can be concluded that each learning model group and learning motivation group give the same results as the previous two conclusions. Thus, there is no need to do a double comparison test on this third result.
Based on the conclusions, it was necessary to do a multiple comparison test for the learning model group and the learning motivation groups. The following is a summary of the test results:

**Table 5. The Results of the Multiple Comparison Test on Learning Model Groups**

| (I) Groups        | (J) Groups     | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | Lower Bound | Upper Bound |
|-------------------|----------------|-----------------------|------------|------|-------------------------|-------------|-------------|
| Experimental 1    | Experimental 2 | 9.6866                | 3.71159    | .084 | -.8417                  | 20.2150     |             |
| Experimental 1    | Experimental 3 | 9.2103                | 3.57554    | .090 | -9.321                  | 19.3527     |             |
| Control           | Experimental 1 | 23.7796*              | 3.60671    | .000 | 13.5487                 | 34.0104     |             |
| Experimental 2    | Experimental 1 | -9.6866               | 3.71159    | .084 | -20.2150                | .8417       |             |
| Experimental 2    | Experimental 3 | -4.763                | 3.85639    | .999 | -11.4154                | 10.4628     |             |
| Control           | Experimental 1 | 14.0929*              | 3.88531    | .090 | -3.0718                 | 25.1140     |             |
| Experimental 3    | Experimental 1 | -9.2103               | 3.57554    | .090 | -19.3527                | .9321       |             |
| Experimental 3    | Experimental 2 | 4.763                 | 3.85639    | .999 | -10.4628                | 11.4154     |             |
| Control           | Experimental 1 | 14.5693*              | 3.75555    | .003 | 3.9162                  | 25.2223     |             |
| Experimental 1    | Experimental 2 | -14.0929*             | 3.88531    | .006 | -25.1140                | -3.0718     |             |
| Experimental 1    | Experimental 3 | -14.5693*             | 3.75555    | .003 | -25.2223                | -3.9162     |             |

Based on observed means.
The error term is Mean Square (Error) = 222.085.
* The mean difference is significant at the 0.05 level.

Table 5 shows that the experimental class 1, the experimental class 2, and the experimental class 3 obtained sig values greater than $\alpha = 0.05$. The results indicated that the classes that applied the MASTER learning model based on Edutainment, the MASTER learning model, and the conventional learning model based on Edutainment produced the same mathematical connection skills. Then, on the control class, it can be concluded that all sig values were smaller than $\alpha = 0.05$, which indicated that the mean value of the control class was smaller than the three experimental classes. Therefore, the classes that applied the MASTER learning model based on Edutainment, the MASTER learning model, and the conventional learning model based on Edutainment produced better mathematical connection skills than the conventional learning model. Furthermore, the multiple comparison test results between learning motivation groups can be seen in Table 6.

**Table 6. The Multiple Comparison Test between Learning Motivation Groups**

| (I) Learning Motivation | (J) Learning Motivation | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | Lower Bound | Upper Bound |
|-------------------------|-------------------------|-----------------------|------------|------|-------------------------|-------------|-------------|
| High                    | Moderate                | 16.8734*              | 3.25280    | .000 | 8.8084                  | 24.9385     |             |
| High                    | Low                     | 37.7128*              | 3.72745    | .000 | 28.4709                 | 46.9547     |             |
| Moderate                | High                    | -16.8734*             | 3.25280    | .000 | -24.9385                | -8.8084     |             |
| Moderate                | Low                     | 20.8394*              | 3.18536    | .000 | 12.9415                 | 28.7372     |             |
| Low                     | High                    | -37.7128*             | 3.72745    | .000 | -46.9547                | -28.4709    |             |
| Low                     | Moderate                | -20.8394*             | 3.18536    | .000 | -28.7372                | -12.9415    |             |

Based on observed means.
The error term is Mean Square (Error) = 222.085.
* The mean difference is significant at the 0.05 level.

Table 6 provides information that all rows’ sig values are more significant than $\alpha = 0.05$. Therefore, each group of learning motivations provided different results. Based on table 2, it can be seen that the marginal average of the high motivation group was higher than the moderate and low motivation group and the moderate motivation group had a higher marginal mean than the low motivation group. The results indicate that students with high motivation had better mathematical connection skills than...
students with moderate and low motivation. Students with moderate motivation had better mathematical connection skills than students with low motivation.

**Discussion**

The study results showed that the combination of learning models (the MASTER learning model and conventional learning model) based on Edutainment provided the same mathematical connection skills. The results were also applied to the application of the MASTER learning model. During the learning process, the three groups gave good responses. Some students asked questions or proposed statements that supported the development of their mathematical connection skills. All students were actively involved in groups to solve all the problems given by the teacher.

However, the results did not apply to students who were given conventional learning only because they did not give a good response. They only answered if the teacher pointed or even forced one of the students to explain a problem. Therefore, their mathematical connection skills were not well developed.

The results of this study are in line with several previous studies (Kastira, 2019; Martinah et al., 2019; Oza & Zaman, 2016; Putri et al., 2013; Santoso, 2018; Sianturi, 2014). The studies revealed that the MASTER learning model based on Edutainment positively impacted students’ performance in the classroom.

The following results of the study showed that students with high motivation had better mathematical connection skills than students with moderate and low motivation. During the learning process, students with high motivation responded well to the learning. The student also provided solutions to the problems in each learning group. Students with high motivation always excel in their mathematical connection skills compared to the other two motivation groups. The results of this study complement several previous studies (Darmawati, 2017; Hamdu & Agustina, 2011; Nurma et al., 2014; Sunadi, 2013), which stated that students with high learning motivation will always have a positive impact compared to students with moderate and low motivation.

There was no interaction between the learning model groups and the learning motivation groups. Therefore, the third results of this study did not differ from the first and the second results of the study. Students with high motivation had better mathematical connection skills than students with moderate and low motivation because they gave the same response in any class.

**CONCLUSION**

Based on the results of the study, it can be concluded that 1) there was a significant influence of the MASTER learning model based on Edutainment on students’ mathematical connections skills; 2) there was an influence of students’ learning motivation (high, moderate and low) on students’ mathematical connections skills; and 3) there was no interaction between the learning model groups (the MASTER learning model based on Edutainment and Conventional learning model) and learning motivation (high, moderate and low) on students’ mathematical connection skills.

Further researchers should combine the MASTER learning model and the Edutainment approach to research other mathematical skills. This combination is expected to be useful for teachers in improving students’ mathematical skills in the classroom.

**REFERENCES**

Abdullah, A., Wardono, W., & Dwijanto, D. (2019). Peran Ethnomatematika pada pembelajaran visualization, auditory, kinesthetic (VAK) terhadap kemampuan pemecahan masalah matematis. *Prosidings Seminar Nasional Pascasarjana (PROSNAMPAS)*, 2(1), 11–15.

Anggreni, N. M. D., Dantes, P. D. N., & Prof. Dr. I Made Candiasa, M. K. (2014). Pengaruh model pembelajaran master dan asesmen autentik terhadap hasil belajar IPA siswa kelas VIII SMP negeri 1 payangan. *Jurnal Penelitian Dan Evaluasi Pendidikan Indonesia*, 4(1), Article 1. https://doi.org/10.23887/jpepi.v4i1.1187

Anita, I. W. (2014). Pengaruh kecemasan matematika (mathematics anxiety) terhadap kemampuan koneksi matematis siswa SMP. *Infinity Journal*, 3(1), 125–132.

Assidiqi, H. (2015). Membentuk karakter peserta didik melalui model pembelajaran search, solve, create, and share. *Math Didactic: Jurnal Pendidikan Matematika*, 1(1), 45–55.
Darmawati, J. (2017). Pengaruh Motivasi Belajar Dan Gaya Belajar Terhadap Prestasi Belajar Ekonomi Siswa SMA negeri di kota tuban. *JURNAL EKONOMI PENDIDIKAN DAN KEWIRAUSAHAAN*, 1(1), 79–90. https://doi.org/10.26740/jepkv1n1.p79-90

Fauzi, K. M. A. (2011). Peningkatan kemampuan koneksi matematis dan kemandirian belajar siswa dengan pendekatan pembelajaran metakognitif di sekolah menengah pertama. -

Hamdu, G., & Agustina, L. (2011). *Pengaruh motivasi belajar siswa terhadap prestasi belajar IPA di sekolah dasar*. 12(1), 7.

Ifda, Y. (2015). Pengaruh konsep accelerated teaching model master terhadap hasil belajar fisika siswa di MAN 2 model medan. *JURNAL IKATAN ALUMNI FISIKA*, 1, 35. https://doi.org/10.24114/jiaf.v1i1.2695

Indriani, M. N., & Akbar, P., & Bernard, M. (2019). analisis kemampuan koneksi matematis siswa SMP pada materi persamaan dan pertidaksamaan linear satu variabel. *Journal on Education*, 1(2), 309–316.

Kastira, C. (2019). *Pengaruh model pembelajaran MASTER terhadap pemahaman konsep matematika peserta didik kelas VIII SMP negeri 1 2xl 1 enam lingkung* [Skripsi, Universitas Negeri Padang]. http://repository.unp.ac.id/22788/

Kiswoyowati, A. (2011). *Pengaruh motivasi belajar dan kegiatan belajar siswa terhadap kecakapan hidup*. 1, 8.

Lestari, W. (2017). Pengaruh kemampuan awal matematika dan motivasi belajar terhadap hasil belajar matematika. *Jurnal Analisa*, 3(1), 76–84. https://doi.org/10.15575/ja.v3i1.1499

Martinah, A. S., Kharisma, O. H., Nasution, S. P., & Pahrudin, A. (2019). Pengaruh model pembelajaran master terhadap literasi matematis ditinjau dari perbedaan gender. *Journal of Mathematics Education and Science*, 2(2), 75–81. https://doi.org/10.32665/james.v2i2.94

Masitoh, I. A. (2016). *Pengaruh kemampuan koneksi matematis terhadap pemecahan masalah kontekstual peserta didik kelas VIII SMP H. Isriati Baiturrahman Semarang pada materi lingkaran tahun pelajaran 2015/2016* [PhD Thesis]. UIN Walisongo.

NCTM. (2000). *Principle and Standars for School Mathematics*. Reston: NCTM.

Nurlaili, N., & Febrina, O. (2018). Pengaruh penggunaan model pembelajaran MASTER TERHADAP hasil belajar kimia pada pokok bahasan larutan elektrolit dan non elektrolit. *Prosiding Seminar Nasional Administrasi Pendidikan & Manajemen Pendidikan*, 0(0), 199–204.

Nurmala, D. A., Dra. Lulup Endah Tripalupi, M. P., & Prof. Dr. Naswan Suharsono, M. P. (2014). Pengaruh motivasi belajar dan aktivitas belajar terhadap hasil belajar akuntansi. *Jurnal Pendidikan Ekonomi Undiksha*, 4(1), Article 1. https://doi.org/10.23887/jpe.v4i1.3046

Oza, A., & Zaman, B. (2016). Edutainment dalam mata pelajaran pendidikan agama islam. *MUDARRISA: Jurnal Kajian Pendidikan Islam*, 6(1), 117–144. https://doi.org/10.18326/mdrv8i1.117-144

Putri, I. A. A. K., Pudjawan, K., & Suditha, I. W. R. (2013). Pengaruh model pembelajaran master terhadap kemampuan berpikir kritis siswa kelas V SD 1 banyuning kecamatan buleleng. *MIMBAR PGSD Undiksha*, 1(1), Article 1. https://doi.org/10.23887/jjpsgd.v1i1.848

Santoso, S. (2018). Penerapan konsep edutainment dalam pembelajaran di pendidikan anak usia dini (PAUD). *INOPENDAS: Jurnal Ilmiah Kependidikan*, 1(1), Article 1. https://doi.org/10.24176/jino.v11i1.2376

Siagian, M. D. (2016). Kemampuan koneksi matematik dalam pembelajaran matematika. *MES: Journal of Mathematics Education and Science*, 2(1).

Sianturi, R. A. (2014). Penerapan metode edutainment dalam pembelajaran menulis teks berita. *Bahtera Bahasa: Antologi Pendidikan Bahasa Dan Sastra Indonesia*, 1(4), Article 4. https://ejournal.upi.edu/index.php/PSPBSSI/article/view/498

Sunadi, L. (2013). Pengaruh motivasi belajar dan pemanfaatan fasilitas belajar terhadap prestasi belajar siswa pada mata pelajaran ekonomi kelas XI IPS di SMA muhammadiyah 2 surabaya. *Jurnal Pendidikan Ekonomi (JUPE)*, 1(3).

Widarti, A. (2013). Kemampuan koneksi matematik dalam menyelesaikan masalah kontekstual ditinjau dari kemampuan matematis siswa. *Skripsi. Jombang. STKIP PGRI Jombang*. 

12 | Journal of Advanced Sciences and Mathematics Education
Widyawati, S. (2016). Pengaruh kemampuan koneksi matematis siswa terhadap prestasi belajar matematika ditinjau dari gaya belajar pada materi bangun ruang sisi datar siswa kelas IX SMP di kota metro. *Jurnal Iqra’: Kajian Ilmu Pendidikan, 1*(1), 47–68.

ZAHLWA, A.I. (2020). *Pengaruh kemampuan koneksi matematis terhadap hasil belajar matematika materi persamaan dan pertidaksamaan linear satu variabel siswa kelas VII MTs negeri 4 trenggalek tahun ajaran 2016/2017.*

Zulfikar, A. (2017). *Pengaruh model pembelajaran MASTER terhadap kemampuan berpikir reflektif matematis siswa.* https://repository.uinjkt.ac.id/dspace/handle/123456789/33733