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Review Article

Program course lab 2.4 mathematics learning media for increasing of creativity domain at Higher Order Thinking Skills (HOTS)

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Abstract

The 21st century requires learning that provides a mathematics learning Media based on the program Courselab 2.4 and constructive experience so that higher-order thinking skills can be increased. One of the Higher order thinking skills is the creativity skill. These educational tools are designed to improve creativity in students. This study aims to improve HOTS with mathematics learning Media based on the program Courselab 2.4. This type of research is a Quasi-Experimental Design with simple random sampling as the sampling technique. Data collecting techniques used were the test method to see the improvement of HOTS. The hypothetical test used was a t-test with a significant level of 5%. The results show that there is an influence from the mathematics learning Media based on the program Courselab 2.4 on higher-order thinking skills and creativity domain. It means that learning can achieve the desired goals and the mathematics learning Media based on the program Courselab 2.4 can be made as a learning solution in the 21st century.

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Introduction

The process of education is not separated from the learning process in which there are learning activities (Kertiasih, 2012; Maesaroh, 2013). Learning is a very basic thing for human life (Olim, 2010). Because Guru is considered an element in education (Ramdani, 2018; Zaini, 2015), and is regarded as a human figure who plays an important role in education (Arwani, 2013; Is, 2017; Melani & Sudarsana, 2018). It is very important for every teacher to know about the learning process of learners (Puspita & Jatmiko, 2013; Rafianti, 2016) so that educators can provide direction and prepare appropriate and suitable learning for the student (Fajariyah et al. 2012).

In addition to using the appropriate models and learning media should also look at the learning that involves many active learners in the learning process (Rodiawati & Komarudin, 2018), both physical, social and mental and can utilize the creativity (Farida, 2015). To achieve that desired goal is not only necessary teacher adequate ability, but must be supported with interesting media learning (Ananda & Fadhilaturrahmi, 2018). The utilization of communication technology for educational activities, educational technology and educational media need to be in the framework of learning activities (Anshori, 2018; Darimi, 2017). Because with a scientific, systematic and rational approach, as demanded by this educational technology, the effective and efficient objectives will be achieved (Anwar & Muzakkir, 2017; Latief, 2017; Pratiwi et al. 2017).

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The utilization of Courselab 2.4 as an interactive learning medium in mathematics education learning becomes relevant because this interactive media is intended to facilitate students to study learning materials (Sarjanti, 2010). Mathematics lessons become one of the subjects that are considered complicated for learners (Hartinah et al. 2019; Putri, 2017; Saefudin, 2012; Sagala et al. 2019). Learning difficulties can be interpreted as a state/condition in the learning process characterized by the barriers to create good learning outcomes (Bardi & Jailani, 2015). Innovation in learning media conducted by educators is expected to change the students ' paradigm to the mathematical lessons that seem difficult (Salafudin, 2015; Saputro & Soeharto, 2015).

The implementation of HOTS is an important aspect in learning mathematics (Abdullah et al. 2017), so that pupils can discover concepts and create their mathematical capacities in fathoming issues (Septina et al. 2018; Utami et al. 2018), achievement, and can make a positive contribution to the world of education (Arifin & Ratu, 2018; Arifin, 2017; Dinni, 2018; Susanto & Retnawati, 2016). The success of students in managing HOTS can be determined by a learning model (Jailani et al. 2017; Madhuri et al. 2012). Efforts to boost student learning outcomes are the goal of the training model (Salam et al. 2016; Setiaji & Suherman, 2019).

The results of previous studies indicate that the mathematics learning media can improve higher-order thinking skills (Fajarwati et al. 2017), as an effective learning tools and increasing of knowledge concepts (Kay & Kletskin, 2012), and students to be creative improve the ability of HOTS (Hasanah et al. 2019; Hashim et al. 2017; Yusuf & Widyaningsih, 2019).

Based on previous research, this study has a novelty that lies in the external variables which are the HOTS by mathematical learning media. The purpose of this research is to improve HOTS by using Mathematics learning Media Program-based Courselab 2.4.

Method

The type of research applied to this research is quasi-experimental method. The populations in this study were 120 students of Junior High School in Lampung Province. The sampling technique used was simple random sampling technique with 64 students of the eighth grade. Experimental Class 1 used the Mathematics learning Media Program-based Courselab 2.4, and the control course utilized routine learning.

Data collecting techniques used was an essay written test to see the HOTS of the students. Here are the HOTS indicators:

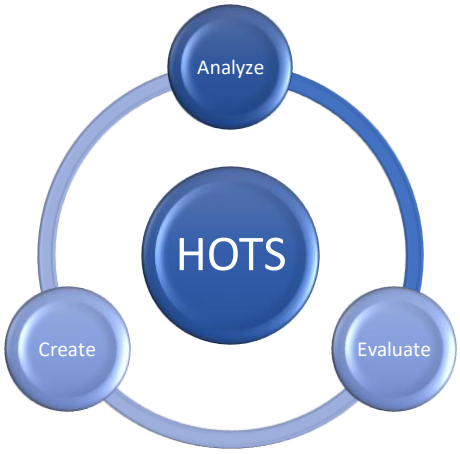

Figure 1.
HOTS Indicators and Creativity Domain

Data analysis for the normality test was the Liliefors method and the homogeneity test was the Barlet method. Hypothesis testing conducted with the Independent Sample t-Test analysis on SPSS 16 program.

Results

Based on the analysis of the data was done by using the normality test using the Liliefors method and homogeneity test using the Barlett method. The following is the result of testthe normality of the mathematical problem solving skills of learners.

Table 2.
Posttest Normality Test

No	Class	L_{count}	L_{table}	Conclusion
1	Experiment	0,152	0,154	H_0Accepted
2	Control	0,129	0,154	H_0Accepted

Based on table 2, it appears that the significance of the 5% score in experimental and control classes indicates that$L_{count} \leq L_{table}$ meaning H_0 is accepted. So the data conclusions are taken in the experiment class and the control class has a normal population. Test data homogeneity in research is conducted to find out if the class of experimentation and control class have the same variance or not. In this study using the testing of homogeneity using the Bartlett test, with the equivalent significance (α) = 0.05 as the step in the table below:

Table 3.
Test Homogeneity of Posttest

Class	N	Dk	Si^2	dk.Si^2	logSi^2	dk.LogSi^2
Experiment	32	450,89	404,58	12542,00	2,61	80,82
Control	32	259,99	377,40	11699,50	2,58	79,88
Amount	64	710,88	781,98	24241,50	5,18	160,70
S^2com	390,99					
Log S^2	2,59					
Bartlett	160,71					
X^2_{count}	0,04					
X^2_{table}	3,48					
Conclusion	$X^2_{count} \leq X^2_{table}$ Then H_0 is accepted, meaning both homogen data					

Table 3 Test homogeneity of the posttest results obtained X^2_{count} = 0.04 and X^2_{count} = 3.48 of the calculation results is seen that$X^2_{count} \leq X^2_{count}$ then H0 received. It is then concluded that both samples have a homogeneous population. After a test of normality and homogeneity, data analysis is conducted to test the hypotheses that have been proposed, this test was conducted to determine whether there is a significant difference between the students of the experimental class and the control class. The following is a table of data hypotheses test results by using Independent-Sample t-Test.

Table 4.
Experimental and Control Class Hypothesis Test Result

Hypothesis Test Independent-Sample t-test	Experiment class and Control class
Criteria	Sig.(2-tailed) ≤ 0,05
Sig.(2-tailed)	0,04
Decision	H_1 Accepted

According to table 4 it appears that for the experiment class data and the control class obtained a Sig. (2-tailed) value of 0.04. The value of Sig. (2-tailed) < 0.05, meaning H1 is accepted. Thus, it can be concluded that there is a difference in the average learning out comes between learning and the use of media based on the Courselab 2.4 program and the teaching of contemporary learning on the medium of flat and triangular class in Junior High School. Here's a summary of the data of the posttest.

Table 5.
Data Description of Posttest

Class	Posttest			
	x_{mak}	x_{min}	$\bar{X}$	S
Experiment	75,00	52,98	68,7	9,14
Control	63,00	16,7	38,78	10,54

Based on Table 5, it is clear that the results of posttest for each class are different. Based on data, it is known that the highest score of the pretest was obtained from experiment class and the lowest score was obtained from control class.

Discussion and Conclusion

Based on the data analysis, the maximum score of students using the Mathematics learning Media Program-based Courselab 2.4 is higher than the conventional model, so, it can influence the students' HOTS and creativity domain. The results of effective trials carried out in the field using the Independent-Sample T Test with a value of Sig. (2-tailed) amounting to 0.04. So it can be concluded that there is a difference in the average value between the control class and experiment. The research is similar to research (Septia & Prahmana, 2018), which is inferred based on statistical results of the test indicating that there is a difference in the average value of the initial test and the final test. Courselab can also improve the students' spatial reasoning skills. The conclusion of this research is that the Multimedia Course Lab modul enhances learning outcomes and spatial reasoning ability of students (Septia & Prahmana, 2018). In addition to the research results examined by (Suhardiman et al. 2017) also concluded that there is an influence on understanding the concept of learners. With an interactive media-based Scramble method Courselab is better than using conventional methods using the media Microsoft Power Point (Suhardiman et al. 2017). Subsequently Batubara, (2014) concluded that there was a significant difference between the learning outcomes of students being taught using Camtasia software and Courselab software on human reproductive system materials.

Based on the results of the analysis, there is an influence of the Mathematics learning Media Program-based Courselab 2.4. The Mathematics learning Media Program-based Courselab 2.4 is said to be better because students can exchange experiences with each other in the learning process (Sutarna & Kusdiana, 2018), increase collaboration among students (Chao et al. 2019), and increase tolerance among fellow students (Rohartati, 2019). It can be seen that the Mathematics learning Media Program-based Courselab 2.4 is better.

Based on the results of the study, it can be concluded that there is an influence of the Mathematics learning Media Program-based Courselab 2.4 on the HOTS and creativity domain. This learning could be used as an alternative in improving students' of HOTS and can be made as a learning solution in the 21st-century.

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References

Abdullah, A. H., Mokhtar, M., Halim, N. D. A., Ali, D. F., Tahir, L. M., & Kohar, U. H. A. (2017). Mathematics Teachers' Level of Knowledge and Practice on the Implementation of Higher-Order Thinking Skills (HOTS). *Eurasia Journal of Mathematics, Science & Technology Education*, *13*(1).

Ananda, R., & Fadhilaturrahmi, F. (2018). Analisis Kemampuan Guru Sekolah Dasar dalam Implementasi Pembelajaran Tematik di SD. *Jurnal Basicedu*, *2*(2), 11–21.

Anshori, S. (2018). Pemanfaatan Teknologi Informasi Dan Komunikasi Sebagai Media Pembelajaran. *Civic-Culture: Jurnal Ilmu Pendidikan PKn dan Sosial Budaya*, *2*(1), 88–100.

Anwar, A., & Muzakkir, M. (2017). Penggunaan Teknologi Audio Visual pada Pembelajaran IPS Ekonomi di MTsS Mutaallimin Aceh Besar. *Jurnal Serambi Akademica*, *5*(2), 37–44.

Arifin, A., & Ratu, N. (2018). Profil Higher Order Thingking Skill Siswa dalam Menyelesaikan Masalah Bangun Datar Segi Empat. *MAJU: Jurnal Ilmiah Pendidikan Matematika*, *5*(2).

Arifin, Z. (2017). Mengembangkan Instrumen Pengukur Critical Thinking Skills Siswa pada Pembelajaran Matematika Abad 21. *Jurnal THEOREMS (The Original Research of Mathematics)*, *1*(2).

Arwani, A. (2013). Peran Spiritualitas Dan Religiusitas Bagi Guru Dalam Lembaga Pendidikan. *Edukasia Islamika*, *11*(1).

Bardi, B., & Jailani, J. (2015). Pengembangan multimedia berbasis komputer untuk pembelajaran matematika bagi siswa SMA. *Jurnal Inovasi Teknologi Pendidikan*, *2*(1), 49–63.

Batubara, N. C. (2014). *Perbedaan Hasil Belajar Siswa Yang Diajar Menggunakan Software Camtasia Dan Software Courselab Pada Materi Sistem Reproduksi Manusia Di Kelas Xi Ipa Sma Negeri 3 Medan Tahun Pembelajaran 2013/2014*.

Chao, J., Jiang, T.-W., Yeh, Y.-H., Liu, C.-H., & Lin, C.-M. (2019). Integration of ARCS motivational model and IT to enhance students learning in the context of Atayal culture. *Journal of Mathematics, Science and Technology Education*, *15*(11), 1–16.

Darimi, I. (2017). Teknologi Informasi Dan Komunikasi Sebagai Media Pembelajaran Pendidikan Agama Islam Efektif. *Jurnal Pendidikan Teknologi Informasi*, *1*(2), 111–121.

Dinni, H. N. (2018). HOTS (High Order Thinking Skills) dan Kaitannya dengan Kemampuan Literasi Matematika. *PRISMA, Prosiding Seminar Nasional Matematika*, *1*, 170–176.

Fajariyah, N. I., Sukestiyarno, Y. L., & Mashuri, M. (2012). Keefektifan Implementasi Model Pembelajaran Problem Posing Dan Creative Problem Solving Terhadap Kemampuan Pemecahan Masalah Peserta Didik Di Smp Negeri 1 Tengaran. *Unnes Journal of Mathematics Education*, *1*(2).

Fajarwati, S. K., Susilo, H., & Indriwati, S. E. (2017). Pengaruh Project Based Learning Berbantuan Multimedia terhadap Keterampilan Memecahkan Masalah dan Hasil Belajar Psikomotor Siswa Kelas XI SMA. *Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan*, *2*(3), 315–321.

Farida, F. (2015). Mengembangkan kemampuan pemahaman konsep peserta didik melalui pembelajaran berbasis VCD. *Al-Jabar: Jurnal Pendidikan Matematika*, *6*(1), 25–32.

Hartinah, S., Suherman, S., Syazali, M., Efendi, H., Junaidi, R., Jermsittiparsert, K., & Umam, R. (2019). Probing-Prompting Based on Ethnomathematics Learning Model: The Effect On Mathematical Communication Skill. *Journal for the Education of Gifted Young Scientists*, *7*(4), 799–814.

Hasanah, U. N., Thahir, A., Komarudin, K., & Rahmahwaty, R. (2019). MURDER Learning and Self Efficacy Models: Impact on Mathematical Reflective Thingking Ability. *Journal for the Education of Gifted Young Scientists*, *7*(4), 1123–1135.

Hashim, H., Ali, M. N., & Shamsudin, M. A. (2017). Infusing High Order Thinking Skills (HOTs) through Thinking Based Learning (TBL) during ECA to enhance students interest in STEM. *International Journal of Academic Research in Business and Social Sciences*, *7*(11), 1191–1199.

Is, S. S. (2017). Peranan Guru Pendidikan Agama Islam dalam Membiasakan Siswa Shalat Berjama'ah. *Tarbawi: Jurnal Pendidikan Agama Islam*, *2*(01), 33–42.

Jailani, J., Sugiman, S., & Apino, E. (2017). Implementing the problem-based learning in order to improve the students' HOTS and characters. *Jurnal Riset Pendidikan Matematika*, *4*(2), 247–259.

Kay, R., & Kletskin, I. (2012). Evaluating the use of problem-based video podcasts to teach mathematics in higher education. *Computers & Education*, *59*(2), 619–627.

Kertiasih, N. K. (2012). Pengembangan CD Interaktif Listrik Statis dan Listrik Dinamis Sebagai Media Dalam Proses Pembelajaran di Sekolah. *Prosiding Aptekindo*, *6*(1).

Latief, M. (2017). Pengembangan Permainan Ular Jarra Sebagai Media Pembelajaran Pada Materi Pokok Asam-Basa. *Indonesian Journal of Educational Studies*, *20*(2).

Madhuri, G. V., Kantamreddi, V., & Prakash Goteti, L. N. S. (2012). Promoting higher order thinking skills using inquiry-based learning. *European Journal of Engineering Education*, *37*(2), 117–123.

Maesaroh, S. (2013). Peranan metode pembelajaran terhadap minat dan prestasi belajar pendidikan agama Islam. *Jurnal Kependidikan*, *1*(1), 150–168.

Melani, G. A., & Sudarsana, I. K. (2018). Degradasi Sikap Mental Spiritual Remaja Hindu Pada Pelaksanaan Sivarâtri Di Desa Pengiangan Kecamatan Susut Kabupaten Bangli (Kajian Pendidikan Hindu). *Jurnal Maha Widya Bhuwana*, *1*(2), 35–44.

Olim, A. (2010). Mencari metode pendidikan karakter untuk PAUD: Belajar berbasis layanan (service learning). *Proceedings of the 4th international conference on teacher education*, 146–161.

Pratiwi, n., gardjito, g., & hamidah, a. (2017). Pengembangan majalah biologi sebagai media pembelajaran pada pokokbahasan protista kelas X Mia Di Sma N 7 Kota Jambi. *Biodik*, *3*(1), 27–34.

Puspita, A. T., & Jatmiko, B. (2013). Implementasi model pembelajaran inkuiri terbimbing (guided inquiry) terhadap keterampilan berpikir kritis siswa pada pembelajaran fisika materi fluida statis kelas XI di SMA Negeri 2 Sidoarjo. *Inovasi Pendidikan Fisika*, *2*(3).

Putri, L. I. (2017). Eksplorasi etnomatematika kesenian rebana sebagai sumber belajar matematika pada jenjang MI. *Jurnal Ilmiah Pendidikan Dasar*, *4*(1).

Rafianti, I. (2016). Identifikasi Tahap Berpikir Geometri Calon Guru Sekolah Dasar ditinjau dari Tahap Berpikir Van Hiele. *JPPM (Jurnal Penelitian dan Pembelajaran Matematika)*, *9*(2).

Ramdani, Z. (2018). Kolaborasi Antara Kepala Sekolah, Guru, Dan Siswa Dalam Menciptakan Sistem Pendidikan Yang Berkualitas. *NCEAP 2019*, *1*(1), 71–78.

Rodiawati, H., & Komarudin, K. (2018). Pengembangan E-Learning Melalui Modul Interaktif Berbasis Learning Content Development System. *Jurnal Tatsqif*, *16*(2), 172–185.

Rohartati, S. (2019). Influence of Cooperative Learning Model of Bamboo Dancing to Students Learning Outcomes in Social Sciences in Elementary School. *International Journal of Science and Applied Science: Conference Series*, *3*(1), 163–175.

Saefudin, A. A. (2012). Pengembangan kemampuan berpikir kreatif siswa dalam pembelajaran matematika dengan pendekatan pendidikan matematika realistik indonesia (PMRI). *Jurnal Al Bidayah*, *4*(1).

Sagala, R., Umam, R., Thahir, A., Saregar, A., & Wardani, I. (2019). The effectiveness of STEM-Based on gender differences: The impact of physics concept understanding. *European Journal of Educational Research*, *8*(3), 753–761.

Salafudin, S. (2015). Pembelajaran Matematika Yang Bermuatan Nilai Islam. *Jurnal Penelitian*, *12*(2), 223–243.

Salam, R., Zunaira, Z., & Niswaty, R. (2016). Meningkatkan Hasil Belajar Membuat Dokumen melalui Penggunaan Model Pembelajaran Kooperatif Tipe Make a Match (Mencari Pasangan). *Jurnal Office*, *2*(2), 173–180.

Saputro, H. B., & Soeharto, S. (2015). Pengembangan media komik berbasis pendidikan karakter pada pembelajaran tematik-integratif kelas IV SD. *Jurnal Prima Edukasia*, *3*(1), 61–72.

Sarjanti, E. (2010). Peningkatan Softskill Mahasiswa Pada Materi Sistem Sosial Melalui Pembelajaran Media Mindscape Dan Diskusi Kooperatif. *Khazanah Pendidikan*, *3*(1).

Septia, T., & Prahmana, R. C. I. (2018). Improving Students Spatial Reasoning with Course Lab. *Journal on Mathematics Education*, *9*(2), 327–336.

Septina, N., Farida, F., & Komarudin, K. (2018). Pengembangan Lembar Kerja Siswa Dengan Pendekatan Saintifik Berbasis Kemampuan Pemecahan Masalah. *Jurnal Tatsqif*, *16*(2), 160–171.

Setiaji, F., & Suherman, S. (2019). Analisis Kemampuan Komunikasi Matematis: Dampak Model Pembelajaran Discovery Learning Terintegrasi Learning Start With A Question. *Desimal: Jurnal Matematika*, *2*(1), 33–42.

Suhardiman, S., Tayeb, T., & Qadri, N. (2017). Perbandingan Pemahaman Konsep Mengggunakan Metode Pembelajaran Scramble Antara Media Interaktif Courselab Dan Media Microsoft Powerpoint Peserta Didik Kelas Xi Mia Man Wajo Kabupaten Wajo. *Jurnal Pendidikan Fisika*, *5*(2), 99–105.

Susanto, E., & Retnawati, H. (2016). Perangkat pembelajaran matematika bercirikan PBL untuk mengembangkan HOTS siswa SMA. *Jurnal Riset Pendidikan Matematika*, *3*(2), 189–197.

Sutarna, N., & Kusdiana, D. (2018). Pengaruh Model Pembelajaran Bamboo Dancing (Tari Bambu) Terhadap Hasil Belajar IPS Siswa SDN 1 Cipedes. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, *2*(2), 251–260.

Utami, T. N., Jatmiko, A., & Suherman, S. (2018). Pengembangan Modul Matematika dengan Pendekatan Science, Technology, Engineering, And Mathematics (STEM) pada Materi Segiempat. *Desimal: Jurnal Matematika*, *1*(2), 165–172.

Yusuf, I., & Widyaningsih, S. W. (2019). HOTS profile of physics education students in STEM-based classes using PhET media. *Journal of Physics: Conference Series*, *1157*(3), 032021.

Zaini, H. (2015). Karakteristik kurikulum 2013 dan kurikulum tingkat satuan pendidikan (KTSP). *El-Idare: Jurnal Manajemen Pendidikan Islam*, *1*(01), 15–31.