11(2), 2022, 44-51 DOI: 10.23960/jppk.v11.i2.2022.05
Jurnal Pendidikan dan Pembelajaran Kimia
e-ISSN: 2714-9595 | **p-ISSN: 2302-1772**
http://jurnal.fkip.unila.ac.id/index.php/JPK/index

Implementation of Contextual-Based Chemistry Electronic Textbook Class X SMA/MA Semester II on Learning Outcomes and Student's Learning Motivation

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Received: July 18th, 2022 Accepted: August 26th, 2022 Online Published: August 29th, 2022

Abstract: Implementation of Contextual-Based Chemistry Electronic Textbook Class X SMA/MA Semester II on Learning Outcomes and Student's Learning Motivation. Low results study students and motivation student in learning chemistry during the Covid-19 pandemic at Baitul Aziz Private High School Deli Serdang. This research aim for knowing outcomes learning students who are taught with contextual-based chemistry electronic textbook more high from score criteria minimum completeness (KKM = 75); knowing student's learning motivation who are taught with contextual-based chemistry electronic textbook. This research using the ADDIE model (Analysis; Design; Development; Implementation; Evaluation) in the article this will discussed at the implementation. Population in study this is is student class X MIPA Baitul Aziz Private Senior High School Deli Serdang 2021/2022 as many as 50 students, sample study this student class X MIPA2 Baitul Aziz Deli Serdang Private High School as many as 24 people were selected with using purposive sampling technique. Instruments used in research including: instruments test as many as 10 essay questions and questionnaires motivation study students. Research results show that results study student higher from KKM value (test one sample t-test obtained result value sig. $< \alpha = 0.002 < 0.05$; score $t_{count} > t_{table} = 8.087 > 1.714$) and students motivated (81.7%) to study chemical with use contextual-based chemistry electronic textbook very effective used in learning chemistry at school to improve learning outcomes and student's learning motivation.

Keywords: Outcomes Learning, Motivation Learning, ADDIE Model, CTL

Abstrak: Implementasi Buku Ajar Elektronik Kimia Berbasis Kontekstual Kelas X SMA/MA Semester II Terhadap Hasil Belajar dan Motivasi Belajar Siswa. *Rendahnya hasil belajar siswa dan motivasi siswa dalam pembelajaran kimia pada masa pandemi Covid-19 di SMA Swasta Baitul Aziz Deli Serdang. Penelitian ini bertujuan untuk mengetahui hasil belajar siswa yang dibelajarkan dengan buku ajar elektronik kimia SMA/MA berbasis kontekstual lebih tinggi dari nilai kriteria ketuntasan minimum (KKM = 75); mengetahui motivasi belajar siswa yang dibelajarkan dengan buku ajar elektronik kimia SMA/MA berbasis kontekstual. Penelitian ini menggunakan model ADDIE (Analysis; Desain; Development; Implementation; Evaluation) pada artikel ini akan dibahas pada tahap implementasi. Populasi dalam penelitian ini adalah siswa kelas X MIPA SMA Swasta Baitul Aziz Deli Serdang 2021/2022 sebanyak 50 orang siswa, sampel penelitian ini siswa kelas X MIPA2 SMA Swasta Baitul Aziz Deli Serdang sebanyak 24 orang yang dipilih dengan menggunakan Teknik purposive sampling. Instrumen yang digunakan pada penelitian diantaranya: instrumen tes sebanyak 10 soal essay dan angket motivasi belajar siswa. Hasil penelitian menunjukkan bahwa hasil belajar siswa lebih tinggi dari nilai KKM (tes one sample t-test nilai sig. $< \alpha = 0.002 < 0.05$; nilai $t_{hitung} > t_{tabel} = 8.087 > 1.714$) dan siswa*

termotivasi (81,7%) untuk belajar kimia dengan menggunakan buku ajar kimia berbasis kontekstual. Dengan demikian buku ajar elektronik kimia berbasis kontekstual sangat efektif digunakan dalam pembelajaran kimia di sekolah untuk meningkatkan hasil belajar dan motivasi belajar siswa.

Keywords: *Hasil Belajar, Motivasi Belajar, Model ADDIE, CTL*

- **INTRODUCTION**

The quality of education is currently experiencing challenges as a result of the outbreak of the Covid-19 virus. Covid-19 is a global pandemic whose spread is so worrying (Cahyani et al., 2020). Almost all countries in the world, closing building school for public and transferable online (Murphy, 2020). Online learning is a transformation process education conventional to in digital form so that have challenges and opportunities separately (Harjanto, 2018; Zhafira, 2020). Change culture study that be one constraint for students, by no direct influence power absorption and activity study students (Purwanto et al, 2020).

Chemistry is one of the natural sciences that requires students to gain real knowledge and understanding. This can be done by direct observation and experimentation. So that chemistry learning is active student learning directly (Roziyah & Haryani, 2017). The view of students who think that chemistry lessons are difficult causes students to be unmotivated in learning chemistry. A student who does not have good learning motivation during learning will carry out learning activities that tend to be more passive than students with good learning interests (Budiariawan, 2019).

Based on the results of observations at Baitul Aziz Private High School, it was found that the teaching and learning process carried out by teachers and students during this pandemic was disrupted, learning outcomes and student learning motivation also decreased. In addition to this, better teaching materials are also needed to support the learning process during the online learning process.

One effort for resolve problem the that is teaching with use electronic textbook. The advantages of e-books are that they have interactive content, practical in storage other than that with the development of the internet, electronic books are more easily accessible (Alwan, 2018; Sinaga et al, 2019) and make it easier for students to understand abstract learning to be clear on the material (Lestari, 2018). Electronic book very effective used in the learning process (Gorghiu et al, 2011).

One of the learning models that can used for make it easy student in understand lesson chemical is a learning model contextual or *Contextual Teaching and Learning* (CTL). Learning model it can empower students in the learning process (Johnson, 2007; Manalu et al, 2016). *Contextual Teaching and Learning* (CTL) is a learning concept in which the teacher brings the real world into the classroom and encourages students to make connections between the knowledge they have and their application in making connections between the knowledge they have and their application in everyday life (Nurhadi, 2003).

On research this implemented material contextual-based chemistry electronic textbook is theory reaction reduction-oxidation and nomenclature compound chemistry. Based on above introduction so aim this research is for knowing results study students who are taught use contextual-based chemistry electronic textbook higher from score criteria minimum completeness (KKM=75) and for knowing student's learning motivation use contextual-based chemistry electronic textbook.

• METHOD

This research is Research and development (R&D) with using the ADDIE model (Analysis; Design; Development; Implementation; Evaluation). Data to be discussed in article this is the data on the implementation process contextual-based chemistry electronic textbook.

Population and Sample

Population in research this is student Class X MIPA Baitul Aziz Private Senior High School Deli Serdang 2021/2022 as many as 50 students, sample for this research are student class X MIPA2 Baitul Aziz Private Senior High School Deli Serdang as many as 24 people were selected with use purposive sampling technique.

Instrument Research

Instruments used in research including: instruments test as many as 10 essay questions and questionnaires learning motivation students. The questionnaire learning motivation sheet is made in the form of a checklist with five choices strongly agree, agree, hesitate, disagree, strongly disagree so that respondents always read each statement item in the instrument.

Research Design and Procedure

In this implementation of contextual-based chemistry electronic textbook the researcher used the One Group pretest-posttest research design.
The research design one group pretest-posttest with scheme of research procedures described in **Figure1.** The research design framework can be seen in **Table 1.**

Tabel 1. Research Design

Class	Pre-test	Treatment	Post-test
Experiment	T_1	X	T_2

Keterangan:

X = The treatment given to the experimental class is learning used contextual-based chemistry electronic textbook

T_1 = Pre-test in the experimental class before being given treatment

T_2 = Post-test in the experimental class after being given treatment

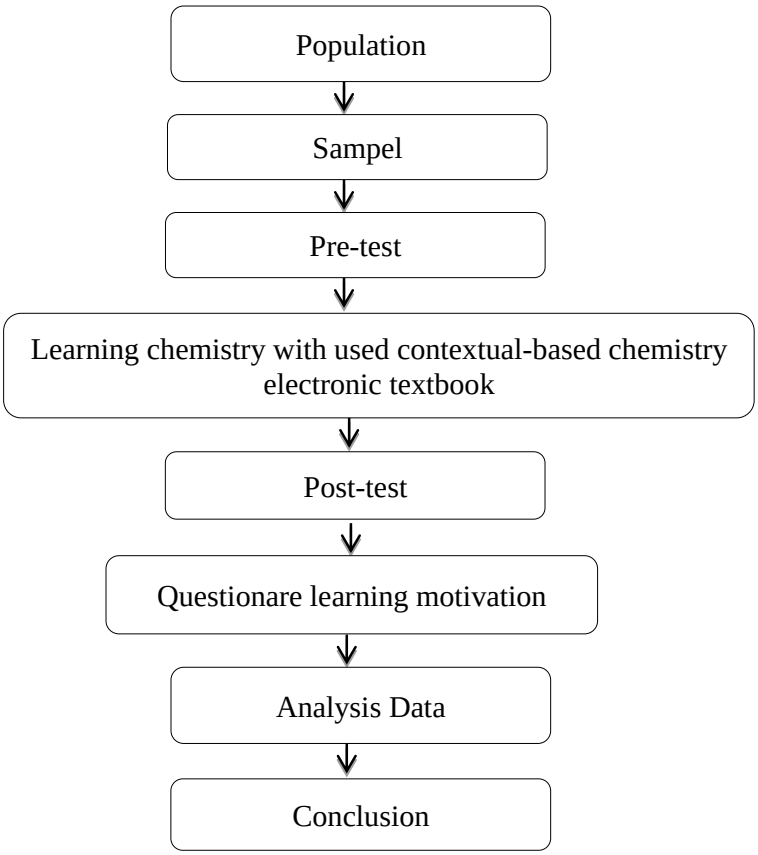

Figure 1. Research Procedure

Analysis Data

The type of data obtained this research in the form of quantitative data and qualitative data. For quantitative data obtained from student's outcomes learning (post-test) conducted with test hypothesis using IBM SPSS-25 software for windows. For qualitative data obtained from questionnaire motivation learning then processed using descriptive percentage for knowing level student's motivation learning after use contextual-based chemistry electronic textbook.

• RESULT AND DISCUSSION

Pre-test Data Normality Test

Before given treatment in class experiment so given a pre-test for knowing knowledge beginning student before study with use contextual-based chemistry electronic textbook. For knowing whether the class pre-test data experiment normally distributed or not. Normality test of pre-test data using IBM SPSS–25 software for windows. The results of the normality test of the pre-test data in **Table 2.**

Table 2. Normality Test of Student Pre-test Data Experiment Class

	Kolmogorov-Smirnov [a]			Shapiro-Wilk		
	Statistics	df	Sig.	Statistics	df	Sig.
PRETEST	.103	24	.200 *	.952	24	.293

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

For normality test with sample not enough of 50 people, the normality test data taken is score significance the Shapiro-Wilk method (Hanusz & Tarasińska, 2015). The data is showed to be normally distributed if score significance > α (0.05). In **Table 2.** The significance value of the student's pre-test data class experiment (0.293) > α (0.05), then could concluded that the student's pre-test data normality distributed.

Post-test Data Normality Test

After given treatment in class experiment so was given a post-test for knowing results study student after learn with use contextual-based chemistry electronic textbook. For knowing what is the class post-test data experiment normality distributed or not. Normality test result data study using IBM SPSS–25 software for windows, normality test data in **Table 3.**

Table 3. Normality Test of Student Post-test Data Experiment Class

Tests of Normality

	Kolmogorov-Smirnov [a]			Shapiro-Wilk		
	Statistics	df	Sig.	Statistics	Df	Sig.
LEARNING OUTCOMES	.137	24	.200 *	.924	24	.072

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

For normality test with sample not enough of 50 people, the normality test data taken is score significance Shapiro-Wilk method. The data is said to be normality distributed if score significance > α (0.05). In **Table 3.** The significance value of the result data study student class experiment (0.072) > α (0.05), then could concluded that the result data study student normality distributed.

Hypothesis Testing One Sample T-Test

After the post-test data is normality distributed, the data can be tested the hypothesis with using SPSS one sample t-test. One sample t-test using IBM SPSS-25 software for windows. The data from the one sample t-test results in **Table 4.**

Table 4. Hypothesis Test of Post-test Data Experiment Class

One-Sample Test

	Test Value = 75					
					95% Confidence Interval of the Difference	
	t	Df	Sig. (2-tailed)	Mean Difference	Lower	Upper
LEARNING OUTCOMES	8.087	23	.002	11.125	8.28	13.97

Based on the **Table 4.** one sample t-test obtained result value sig. < α (0.002 < 0.05) and $t_{count} > t_{table}$ (8.087 > 1.714) then H hypothesis an alternative is accepted, so that

student's learning outcomes after using contextual-based chemistry electronic textbook higher from score Criteria Minimum Completeness (KKM). Previous research conducted by Mardhiya & Sinaga (2020) that book electronic based contextual could increase outcomes learning students.

Student's Learning Motivation Data

After student taught with use contextual-based chemistry electronic textbook so student given questionnaire for knowing level learning motivation when use contextual-based chemistry electronic textbook. This presented student's learning motivation data analyzed use IBM SPSS software – 25 for windows in **Table 5.**

Table 5. Student's Learning Motivation

Descriptives

			Statistics	Std. Error
STUDENT'S MOTIVATION TO STUDY	mean		58.00	.702
	95% Confidence Interval for Mean	Lower Bound	56.55	
		Upper Bound	59.45	
	5% Trimmed Mean		58.16	
	median		59.00	
	Variance		11.826	
	Std. Deviation		3.439	
	Minimum		50	
	Maximum		63	
	Range		13	
	Interquartile Range		4	
	Skewness		-.805	.472
	Kurtosis		.284	.918

Student's learning motivation value calculated with use formula:

$$Value\ Student's\ Learning\ Motivation = \frac{\sum score\ obtained}{\sum score\ maximum}\ x\ 100$$

For count percentage mean value student's learning motivation could use formula:

$$\%\ \text{Average Value of Student's Learning Motivation} = \frac{\sum Value\ learning\ motivation}{\sum Sample\ research}\ x\ 100\%$$

For range percentage and category percentage learning motivation in **Table 6.**

Table 6. Range and Category Percentage Motivation Study Student

Range Percentage	Category
85% - 100%	Very motivated
70% - 84%	Motivated
60% - 69%	Enough motivated
50% - 59%	Not motivated
< 50%	Very not motivated

From research data obtained the average value student's learning motivation:

$$\%\ Average\ Value\ Student's\ Learning\ Motivation = \frac{1960.563}{24}\ x\ 100\% = 81.7\%$$

Percentage score student's learning motivation in class experiment 81.7%, could be councluded student's learning motivated for study chemical with use contextual-based chemistry electronic textbook. The results of the above research about results study students and motivation study student moment use contextual-based chemistry electronic textbook same with results research before. Based on results study Swandini et al (2017) that developed electronic textbook could increase outcomes learning and student's learning motivation. Aftiani et al (2021) also explain that developed electronic textbook could increase independence learning and student's learning motivation.

- **CONCLUSION**

Based on results study influence implementation contextual-based chemistry electronic textbook to outcomes learning and student's learning motivation obtained data based on one sample t-test sig. < α (0.002 < 0.05) and $t_{count} > t_{table}$ (8.087 > 1.714) could concluded that results study student morehigh from score criteria minimum completeness (KKM). Percentage score student's learning motivation in class experiment 81.7% student motivated for study chemical with use contextual-based chemistry electronic textbook. Concluded that contextual-based chemistry electronic textbook very effective used in study chemistry and improve student's learning motivation.

This article was extracted from a research funded by Direktorat Riset, Teknologi, dan Pengabdian Masyarakat Kementrian Pendidikan Kebudayaan, Riset, dan Teknologi (Number124/E5/PG.02.00.PT/2022) Master Thesis Research (PTM). Hereby, we would like to express our gratitude to the sponsors of this research.

- **ACKNOWLEDGMENTS**

This article was extracted from a research funded by Direktorat Riset, Teknologi, dan Pengabdian Masyarakat Kementrian Pendidikan Kebudayaan, Riset, dan Teknologi (Number124/E5/PG.02.00.PT/2022) Master Thesis Research (PTM). Hereby, we would like to express our gratitude to the sponsors of this research.

- **REFERENCES**

Aftiani, R. Y., Khairinal, K., & Suratno, S. (2021). Pengembangan Media Pembelajaran E-Book Berbasis Flip PDF Professional Untuk Meningkatkan Kemandirian Belajar Dan Minat Belajar Siswa Pada Mata Pelajaran Ekonomi Siswa Kelas X IIS 1 SMA Negeri 2 Kota Sungai Penuh. *Jurnal Manajemen Pendidikan Dan Ilmu Sosial, 2(1),* 458-470.

Alwan, M. (2018). Pengembangan Multimedia E-Book 3D Berbasis Mobile Learning Untuk Mata Pelajaran Geografi SMA Guna Mendukung Pembelajaran Jarak Jauh. *Jurnal At-Tadbir, 1(2),* 26-40.

Budiariawan, I. P. (2019). Hubungan motivasi belajar dengan hasil belajar pada mata pelajaran kimia. *Jurnal Pendidikan Kimia Indonesia, 3(2),* 103-111.

Cahyani, A., Listiana, I. D., & Larasati, S. P. D. (2020). Motivasi Belajar Siswa SMA pada Pembelajaran Daring di Masa Pandemi Covid-19. *IQ (Ilmu Al-qur'an): Jurnal Pendidikan Islam, 3(01),* 123-140.

Gorghiu, L. M., Gorghiu, G., Bîzoi, M., & Suduc, A. M. (2011). The electronic book-a modern instrument used in teachers' training process. *Procedia Computer Science, 3*, 563-567.

Hanusz, Z., & Tarasińska, J. (2015). Normalization of the Kolmogorov–Smirnov and Shapiro–Wilk tests of normality. Biometrical Letters, 52(2), 85-93.

Harjanto, T., & Sumunar, D. S. E. W. (2018). Tantangan dan peluang pembelajaran dalam jaringan: studi kasus implementas elok (E-Learning: Open for knowledge sharing) pada mahasiswa profesi Ners. *Jurnal Keperawatan Respati Yogyakarta, 5*, 24-28.

Johnson, E. B. (2007). *Contextual teaching dan learning, menjadikan kegiatan belajar-mengajar mengasyikkan dan bermakna*. Bandung: Mizan.

Lestari, R. T., Adi E. P., Soepriyanto, Y. (2018). E-Book Interaktif. *Jurnal Kajian Teknologi Pendidikan, 1(1),* 71-75.

Mardhiya, J., & Sinaga, M. (2020). Bahan Ajar Elektronik (E-Book) Kimia Umum II Berbasis Kontekstual Materi Larutan: Desain dan Pengembangan. *EduTeach: Jurnal Edukasi dan Teknologi Pembelajaran*, 1(2), 100-107.

Manalu, E., Silaban, S., Silaban, R., & Hutabarat, W. (2016). The development of chemical practice guidebook colloid system-based integrated contextual character values. Jurnal Pendidikan Kimia, 8(2), 87-89.

Murphy, M. P. A. (2020). COVID-19 and emergency eLearning: Consequences of the securitization of higher education for post-pandemic pedagogy. *Contemporary Security Policy, 41(3),* 492–505.

Nurhadi. 2003. Pendekatan Konstekstual (Contextual Teaching and Learning). Jakarta: Depdiknas.

Purwanto, A., Pramono, R., Asbari, M., Hyun, C., Wijayanti, L., Putri, R., & santoso, priyono. (2020). Studi Eksploratif Dampak Pandemi COVID-19 Terhadap Proses Pembelajaran Online di Sekolah Dasar. *EduPsyCouns: Journal of Education, Psychology and Counseling*, *2(1),* 1-12.

Roziyah, I. F., & Haryani, S. (2017). Peningkatan Motivasi dan Hasil Belajar Melalui Contextual Teaching Learning Berbantuan Study Card. *Jurnal Inovasi Pendidikan Kimia*, 11(1) 1828-1839.

Sinaga, P., Amsor, N. A., & Cahyanti, F. D. (2019). Effectiveness of the new generation e-book application for mobile phones in improving the conceptual mastery of kinematics. *International Journal of Mobile Learning and Organisation*, *13(2),* 217–232.

Swandini, A., Supraptono, E., Sukamta, S., & Nadir, M. I. (2017). Pengaruh Buku Ajar Elektronik Berbasis Android Pada Materi Ajar Eksponen Dan Logaritma. *Jurnal Dinamika Pendidikan*, 7(1), 1-9.

Zhafira S. M. (2020). D*aring Sebagai Sarana Pembelajaran Selama Masa Karantina Covid-1*, *4*, 37–45.