RESEARCH ARTICLE

Development of e-worksheet based on search, solve, create, and share (SSCS) Islamic context to improve science process skills on excretory system material

Tika Audyta Elvanuari[a,1], Z. Zulfiani[a,2,*], Eny Supriyati Rosyidatun[a,3]

[a] Biology Education Study Program, Faculty of Tarbiyah Science and Teacher Training, State Islamic of Syarif Hidayatullah Jakarta, Ir H. Juanda Street 95 Ciputat, South Tangerang 15412, Indonesia.

[1]tikaaudytaaa@gmail.com; [2]drzulfiani@gmail.com*; [3]eny.rosyidatun@uinjkt.ac.id

Abstract: Electronic student worksheets (e-worksheet) are needed as alternative teaching materials in learning. This study aims to produce teaching materials in the form of e-worksheet based on Search Solve Create and Share (SSCS) Islamic context to improve science process skills on class XI excretory system material that is worthy of the results of validity, responses of students and biology teachers. This research was conducted at MAN 1 Bogor. The research model used is a 4D model (Define, Design, Develop, Disseminate), but in research only to the development stage (Develop). The e-worksheet teaching materials developed are tested for validity. The results of validity tests by design and media experts obtained 89% in the very decent category, material expert assessments obtained 84% in the very feasible categories, and expert assessments of Islamic religious education obtained 100% in the very feasible categories. The results of student responses obtained percentages of 89% in limited trials and 89.7% in expanded trials. Based on the findings of the research results, it can be concluded that E e-worksheet based on Search Solve, Create and Share (SSCS), an Islamic context to improve science process skills on the excretory system material developed, is very feasible to be used and applied to biology learning.

Keywords: excretory system; e-worksheet; Islamic context; science process skills; SSCS

For correspondence:
drzulfiani@gmail.com

Article history:
Received: 8 January 2024
Revised: 28 February 2024
Accepted: 1 March 2024
Published: 29 March 2024

10.22219/jpbi.v10i1.31560

© Copyright Elvanuari *et al*. This article is distributed under the terms of the Creative Commons Attribution License

p-ISSN: 2442-3750
e-ISSN: 2537-6204

How to cite:
Elvanuari, T. A., Zulfiani, Z., & Rosyidatun, E. S. (2024). Development of e-worksheet based on search, solve, create, and share (SSCS) Islamic context to improve science process skills on excretory system material. *JPBI (Jurnal Pendidikan Biologi Indonesia), 10*(1), 195-210. https://doi.org/10.22219/jpbi.v10i1.31560

Introduction

Law on the education system number 20 of 2003 explains that education is a conscious and planned effort to create an atmosphere of learning and learning so that students can be active in developing their potential. Education aims for students to have strength in religious and spiritual matters, self-control, personality, intelligence, noble character, and skills that society needs (Pristiwanti et al., 2022). Multi-platform education in the era of technology 4.0 or 21st-century education integrates learning patterns and models with computer technology platforms. This integration aims to achieve the national education goals listed in law number 20 year 2003 concerning the national education system (Mesterjon, 2021). Thus, this goal is the main element that guides in Education. Through this goal, it is hoped that students can develop their abilities and potential in order to achieve better self-improvement.

In the context of the education system, teachers play a vital role. Teachers have the responsibility and trust to develop tasks and deal with various problems that arise among students. One of the efforts made by teachers to overcome this problem is to understand, choose, and operate various types of media and learning resources and their respective functions. The learning process can be implemented more effectively and efficiently by choosing and applying suitable media and learning resources, this will help achieve optimal learning (Ahmadi & Abdullah, 2021). Media and learning resources are significant in learning in today's modern era. Teachers are expected to be able to use good learning media that are easy to use to deliver material effectively to students. In addition, teachers are also expected to be able

to attract students learning interest by presenting material interestingly, especially material that tends to be boring or focuses on memorization merely (Komalasari, 2019). Teachers, as a source of knowledge for students, are expected to be able to present material interestingly to optimize the learning process in the classroom.

One learning media teachers can use to optimize classroom learning is e-worksheet (Miqro & Baiq, 2021). Electronic Student Activity Sheet (e-worksheet) is an interactive digital worksheet that it is easily accessible to students, making learning more effective and efficient (Pratiwi, 2021). This is in line with the results of an interview with biology teachers at MAN 1 Bogor, who said that biology learning has never used e-worksheet, only printed worksheet containing material briefs and questions. Therefore, learning is sometimes dull, and the motivation of learning learners for biological material is reduced. This is to the effectiveness of e-worksheet in implementing learning media, namely making the learning atmosphere more diverse and exciting and students become active. Therefore, worksheet is a medium that can help students understand the material betterr (Sari et al., 2022).

e-worksheet has several advantages over printed LKPD, the advantage of e-worksheet lies in its ease and practicality of use. In addition, teachers also have the flexibility to add multimedia elements such as audio, video, and links, as well as various types of questions such as short fills, multiple choice, and so on (Masruhah et al., 2022). Based on the advantages of e-worksheet, it can be used as an innovation of teaching materials that teachers can use in the process of learning biology. This is the teacher's role in increasing students' understanding to solve difficulties in the learning process (Wahyuni et al., 2022).

Natural Science (Science) is a systematic science that studies nature. Science is not only concerned with the knowledge of facts, concepts, or principles (Wulandari, 2016). One of the branches of science is biology. As part of science, Biology has three interrelated and inseparable aspects, namely biology as a process, product, and attitude (Widyasari & Sarwanto, 2013). This implies that the ideal learning of Biology should cover all three aspects. Therefore, in science learning, it is necessary to combine the experience of the science process with understanding the products of science through direct experience. The emphasis of the process is carried out by developing a skill called Science Process Skills (SPS). The process through this scientific activity can be developed by teachers, among others, using the SSCS Model (Lubis & Lubis, 2021). The interviews conducted with biology teachers show that the learning process has never used the SSCS model and has not emphasized science process skills. The learning process only focuses on delivering material without considering aspects of understanding science and achieving other components.

One of the learning models that can be integrated into e-worksheet is Search, Solve, Create and Share (SSCS). The SSC learning model is a learning model that involves students consisting of four stages, namely the Search stage (search stage), the Solve stage (stage troubleshooting), stage Create (stage conclude), and stage Share (stage displays) (Lele & Diyah, 2022). Therefore, this SSCS model can be an alternative for students. So that learners can overcome difficulties in understanding biology lessons. This is because students are required always to try individually to solve the problems found. Using the The SSCS model can also strengthen science and concepts in better biology learning (Syafri et al., 2020).

Biology learning at Madrasah Aliyah Negeri (MAN) has a character that emphasizes religious values (Mulyono, 2013). So that students gain knowledge not only in the field of science but also in Islamic knowledge; this is also supported by the statement of biology teachers that in the process of learning, teachers have associated material with verses of the Qur'an. However until now, there has been no teaching material that integrates the Islamic context for teachers to support the character of the madrasa. Therefore, teaching materials combined with Islamic contexts are needed in biology learning.

Science and religion are one science, whole and copy-related because knowledge will not be separated from the knowledge of the Quran and Hadith, which there is no doubt (Chanifudin & Nuriyati, 2020). The selection of material in this study is the excretory system. This is because the organ. The excretory system is closely related to the verses of the Qur'an. The description above shows that the biology learning process has never used the SSCS model. The teaching materials used have yet to be integrated with the Islamic context and have not emphasized the skills of the 21st century, one of which is the science process skills. Therefore, developing teaching material that includes SSCS stages combined with an Islamic context is necessary to improve science process skills on excretory system material. This study aims to Develop an e-worksheet-based Search, Solve, Create and Share (SSCS) Islamic context to Improve Science Process Skills on Excretory System Material.

Method

The development model used is a type of research using a 4-D model (define, design, develop, disseminate). However, this research is limited only to the development stage, considering the time and permission of the school to conduct research. This research was carried out at MAN 1 Bogor with sample XI MIPA 4 as a limited trial sample and XI MIPA 1 as a trial sample expanded in May of the school year

2023/2024. SSCS-based e-worksheet Islamic Context to Improve Science Process Skills on Excretory System Materials was validated by three material experts, one design and media expert, and one expert in Islamic religious education.

The stages of a 4D model include the following: The definition stage includes initial analysis, concept analysis, task analysis, and learning objectives analysis. The design stage is to design SSCS-based E-WORKSHEET to improve science process skills. E-worksheet comprises two activities: kidney organs and skin and liver and lungs. The process of making e-worksheet uses the canva application. E-worksheet, designed using Canva, is then made as a liveworksheet. Liveworksheets is a platform that helps teachers create electronic worksheets.

Liveworksheets are handy for teachers when creating interactive learning media. This `application provides various features that can be utilized, such as images, audio, and even video, to add to the appeal of Liveworksheet learning media (Aprinastuti, 2023). The development stage, namely the developed e-worksheet, is validated by several experts before it is ready for students to use. E-worksheet was developed on students of grade XI MAN 1 Bogor with limited trials on nine of grade XI MIPA 4, then tested widely on 32 class XI students. The instruments include e-worksheet validation sheets, science process skills test sheets, and student response questionnaires. Data accumulation methods include validation, tests, and questionnaires.

The data in this development research consists of qualitative data and quantitative data. Qualitative data comes from questionnaire instruments distributed to material experts, media and design experts, and experts experienced in integrating nature and science. This qualitative data is in the form of comments or suggestions from each expert on the SSCS-based e-worksheet questionnaire on excretory system material. Quantitative data in this development is obtained through expert, student, and biology teacher scores in questionnaire sheets. The questionnaire given to validators is carried out to determine the validity of e-worksheet based on the validation sheet filled out by validators using the Likert scale. The score criteria by expert validators in the questionnaire can be seen in Table 1.

Table 1. Likert scale score

Criterion	Number
Very good	5
Good	4
Enough	3
Not good	2
Very unkind	1

Quantitative data is also obtained from the results of readability tests analyzed by presentation using the Guttman scale. The score criteria for the readability test results in the questionnaire can be seen in Table 2.

Table 2. Guttman scale score

Answer	Score
YES	1
NOT	0

Table 2 technical data analysis for students' and biology teachers' validity, readability and response tests is calculated using Formula 1. Information: Ps is the Percentage score, S is the number of respondents' answers in an item, and N is the Maximum number of scores.

$$Ps = \frac{S}{N} = 100\% \quad (1)$$

Next, the data is interpreted the score. Here are the criteria for interpreting the score based on the interval of Table 3.

Table 3. Criterion Validity

Percentage	Criterion
81 % - 100 %	Very decent/good
61 % - 80 %	Decent/good
41 % - 60 %	Quite decent/sufficient Good
21 % - 40 %	Less feasible/less Good
1 % - 20 %	Not worth it/not

(Source: Kahar & Layn, 2018)

Data analysis techniques to measure the effectiveness of SSCS-based e-worksheet in the Islamic context to improve science process skills on excretory system material using the following N-gain,

Formula 2. Next, as the data is interpreted the score (Table 4).

$$N\ gain = \frac{Posttest\ score - pretest\ score}{Max\ Scroe - Pretestt\ Score} \quad (2)$$

Table 4. Value n-gain

N-gain value (g)	Criterion
0.70 ≤ (g) ≤ 1.00	Tall
0.30 ≤ (g) ≤ 0.70	Keep
0.00 ≤ (g) ≤ 0.30	Low
(g) = 0	Remain
-1.00 ≤ (g) ≤ 0.00	There is a decrease

(Hake, 1999).

Results and Discussion

Define Stage

The purpose of the define stage is to determine the learning process's needs and collect information related to the teaching materials that will be developed. The defined stages include carrying out a needs analysis; the needs analysis was carried out by interviewing one MAN 1 Bogor biology teacher. The purpose of this interview was to find out the problems at the school related to the use of learning models, the learning process and the use of teaching materials, and the school's needs in using e-worksheet teaching materials in an Islamic context to improve skills science process.

The interviews conducted with biology teachers showed that 1) The curriculum used was the 2013 curriculum. 2) The learning model used was adapted to the material. 3) Teachers usually use learning models that use projects or PJBL. 4) Difficulties during the learning process include several students who still need to complete the assignment, so there is additional time, and it takes longer for one material. 5) The biology learning process has never used the SSCS learning model. 6) Teachers are interested in using the SSCS learning model. The teacher once linked biology material to the holy verses of the al-Quran. Teachers are very interested when biology material is presented in an Islamic context. 7) The teaching materials used in biology are textbooks, worksheet and the internet.

It can be seen that the learning process carried out by biology teachers is that they link the material with verses from the al-Quran. However, the learning process has yet to be combined with Islamic knowledge. Apart from that, the teaching materials used are combined with an Islamic context, which is in line with the aim of madrasa education, which is to meet the needs of students through advances in science and technology. The results of interviews with teachers can be seen in Table 5.

Table 5. Summary of Biology teacher interview results

NO	Assessment Aspects	Assesment Indicators	Teacher Interview Description
1.	Learning in the 2013 curriculum	Learning models used in schools	The curriculum used in schools is the 2013 Curriculum. The learning model used is adapted to the material. Teachers usually use a learning model that uses projects. The difficulties experienced by teachers are that several students still need to do their assignments, so there is additional time, and it takes longer for one material. Teachers have never used the Search, Solve, Create and Share (SSCS) model in the learning process. Therefore, teachers are interested in using the Search, Solve, Create, and Share (SSCS) learning model in the biology learning process.
2.	Biology learning at school	Islamic Context	The teacher once linked the biology material to the holy verses of the al-Quran. The teacher was very interested when the biology material was presented by relating it to an Islamic context.
3.	Teaching materials	Use of Teaching Materials in schools	The teaching materials used in biology learning are circulating on the market, such as textbooks, worksheet and the internet. The teaching materials often used are printed worksheet, made by teachers, and only contain short material and questions. They do not emphasize 21st-century skills, one of which is that they do not emphasize indicators of science process skills. In the learning process, the teacher has never used e-worksheet. Therefore, teachers are very interested in using e-worksheet because it is interactive learning. Hence, it increases students' learning motivation, and students tend not to get bored but stay energized.

Nurkholis Setiawan, as Director of Madrasah Education at the Ministry of Religion of the Republic of Indonesia, emphasized the importance of teachers who continuously explore and study Islamic knowledge theories and apply them in developing the quality of madrasas. Teachers must also master general subjects appropriate to their field, which aligns with religious understanding (Suhaili et al., 2022). Therefore, madrasa teachers need to continue to develop and apply Islamic knowledge to improve the

quality of madrasas per the guidelines of the Indonesian Ministry of Religion.
Based on findings through needs analysis, the use of technology in the learning process needs to be optimized. This is because the worksheet still uses a simple worksheet that only contains questions. Therefore, the LKPD needs further improvement in terms of training science process skills combined with Islamic context. This is in line with the explanation Pratiwi (2021) that one of the learning media that teachers can use to optimize classroom learning is e-worksheet. Electronic Student Activity Sheet (e-worksheet) is an interactive digital form of worksheet that is easily accessed by students so that learning is more effective and efficient.
Using e-worksheet is very easy and practical. E-worksheet is also equipped with various features that make it more attractive. In the worksheet, teachers can load materials, learning videos, links, audio, and various types of questions such as multiple choice, short answers, drop-downs, and others (Miqro & Baiq, 2021). Currently, students are used to using cellphone technology and laptops in the learning process, so e-worksheet will be readily accepted. This is relevant to the learning process at MAN 1 Bogor, which has never used e-worksheet. The learning process only uses the internet, textbooks and printed worksheet.

Design and Development Stage

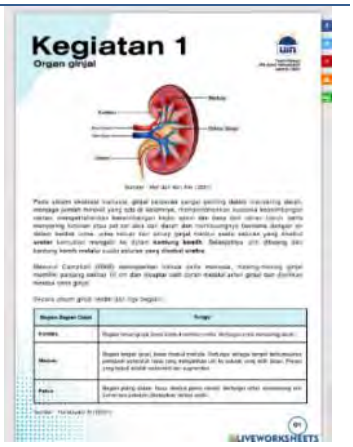
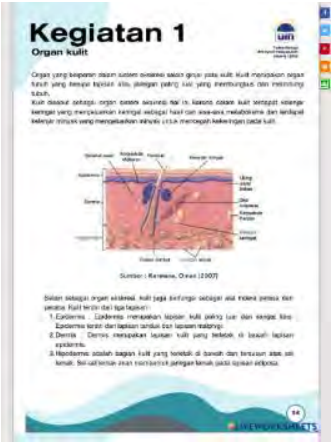
At the design stage, the e-worksheet is validated by experts, namely Design and Media experts, Material experts, and Islamic Religious Education experts. The process of making this e-worksheet uses the Canva application. E-worksheet designed using Canva, was then created as a liveworksheet. Liveworksheets is a platform that helps teachers create electronic worksheets. Liveworksheets are handy for teachers when creating interactive learning media. This application provides various features that can be utilized, such as images, audio and even video, to add to the appeal of Liveworksheet learning media (Aprinastuti, 2023).
The development stage is carried out after the e-worksheet has been designed to produce an e-worksheet development product that is suitable and suitable for use based on suggestions and comments from expert validators. This validation was carried out by one design and media expert, namely Mr Solihin, M.Pd, and three material experts, namely Mrs Prof. Dr Zulfiani S.Si, M.Pd, Mrs Eva Fadilah, M.Pd, Mrs Ida Nursanti, S.Pd, and one expert in Islamic religious education, namely Mr Buchori Muslim, M.Pd.
Next, through the revision process and validation by validators, the e-worksheet will undergo readability and response testing by 9 students from class XI MIPA 4 at MAN 1 Bogor. This trial aims to evaluate the student's response to the e-worksheet and determine if the product is worthy of further development. If the e-worksheet is deemed suitable during the limited trial, further testing will be conducted with 32 students from class XI MIPA 1 at MAN 1 Bogor. The results of SSCS-based e-worksheet validation in an Islamic context by design and media experts can be seen in Table 6.

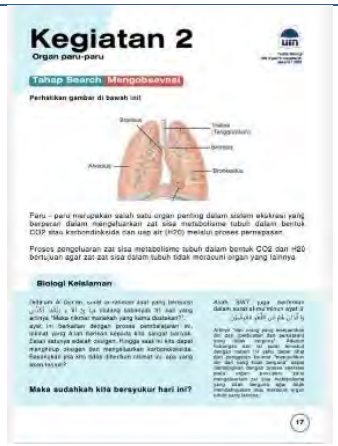
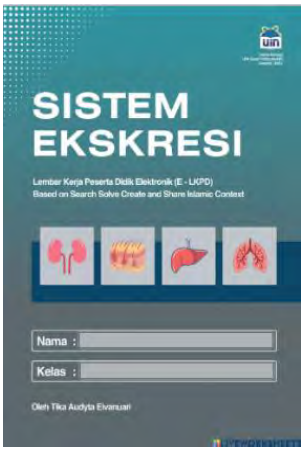
Table 6. Results of validation of SSCS-based E-WORKSHEET in the Islamic context by design and media experts

NO	Aspects Valuation	Percentage Valuation	Criterion
1.	Component Graphics	85,7%	Very Proper
2.	Component Language	90 %	Very Proper
3.	Component Serving	91,4%	Very Proper
	Average	89%	Very Proper

Design and media experts validate products in e-worksheet as teaching materials for biology learning, especially materials excretory systems in humans. Validation of design and media on e-worksheet teaching materials is needed to assess whether the product design that has been prepared is appropriate or not before testing (Masykur et al., 2017).
Based on the table of design and media validation results above, the results of the three components are very feasible. The presentation component gets the highest percentage of assessment among other components. The percentage score of the validation results of design and media experts in each aspect also passed the 80% score. This means that the design and media on the media are decent and perfect (Kahar & Layn, 2018).
The design and media of the e-worksheet that have been compiled are also to the requirements for the preparation of the worksheet that the e-worksheet is packaged attractively using clear illustrations and images so that it will spurring students to be enthusiastic in learning (Kosasih, 2021). Therefore, the design and media that have been prepared are very valid for use at the trial stage for students. However, from the design and media validators, there are revisions to the image of the excretory system organs, the source of which must be included can be seen in Table 7.

Table 7. Revision Results from Design and Media Experts

Components	Before revision	After revision
There are additional sources for images of kidney, liver, skin, and lung organs, as well as changes to images of kidney and liver organs.		
		
		

Components	Before revision	After revision
		
There is an additional author's name on the cover.		
There is additional author biodata before the closing cover.	There is no identity or biography of the author	

The second validation is by material experts. The results of SSCS-based e-worksheet validation in the Islamic context by material experts can be seen in Table 8.

Table 8. Results of validation of SSCS-based e-worksheet in Islamic context by material experts

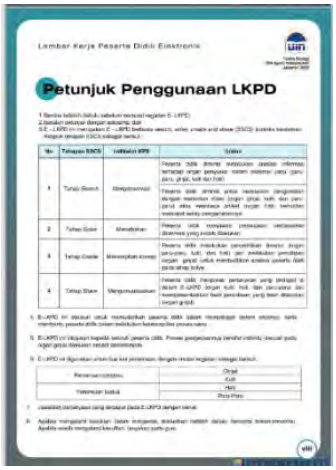
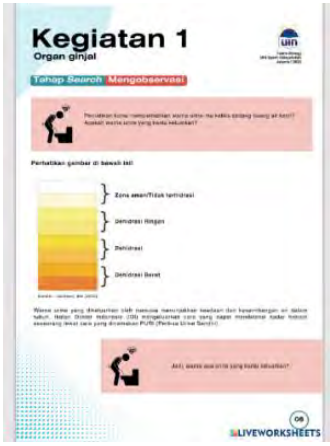
NO	Assessment Aspect	Average Assessment Percentage	Criterion
1.	Feasibility fill	86,7%	Very Proper
2.	Feasibility Language aspect	86.7 %	Very Worth It
3.	Feasibility aspects Serving	80%	Very Worth It
	Average	84%	Very Proper

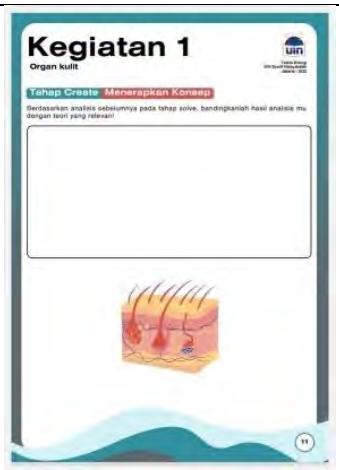
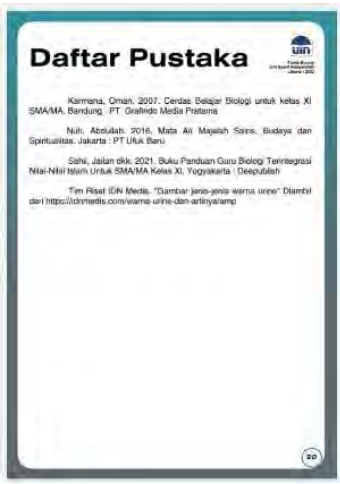
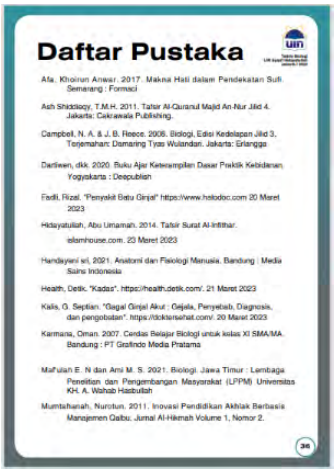
Material validation is carried out to determine the validity of the material developed is feasible or not before being given to students (Windi et al., 2022). Based on the table of material validation results above, aspects of content and language feasibility get the same score and the highest, with an average of 86.7% in the very category worth it. This shows that the learning materials and language contained in the e-worksheet are based on the competencies achieved so that teachers can discover students' achievements via e-worksheet.

This is in accordance with the presentation of (Saringatun et al., 2021) that learning materials on e-worksheet can be designed in such a way as to be able to meet the needs of students so that they can increase interest learners and can cultivate curiosity to understand concepts in their way. Therefore, the material in e-worksheet is very feasible for students to use at the trial stage.

The e-worksheet, which material experts have validated, has several revisions, including sentences in the instructions and kidney organs and writing a good and correct bibliography. Apart from that, there are additional references using links that are easy for students to access to help students answer. The results of the material expert validation revision can be seen in Table 9.

Table 9. Material Expert Revision Results

Components	Before revision	After revision
There are changes to the instructions for using the e-worksheet, the sentence has been clarified into an instruction sentence.		
There are changes to the pictures and explanations regarding the kidney organs.		

Components	Before revision	After revision
There are additional references or book sources at the create stage by inserting links that are appropriate to the learning material		
There are changes to writing a good and correct bibliography.		

The next validation is an expert in Islamic religious education. The results of SSCS based Islamic context e-worksheet by Islamic religious educators can be seen in Table 10.

Table 10. Results of validation of SSCS-based Islamic context e-worksheet by experts in Islamic religious education

NO	Assessment Aspect	Average Percentage Valuation	Criterion
1.	Feasibility fill	86,7%	Very Proper
2.	Feasibility aspects language	86.7 %	Very Worth It
	Average	89%	Very Proper

Based on the abovementioned expert validation results of Islamic religious education, the assessment results of both aspects. The assessment gets a percentage of marks with an average of 100% in the very decent category. Therefore, based on the assessment of expert validators of Islamic religious education, it can be concluded that the holy verses of the Qur'an, hadith and tafsir contained in e-worksheet are relevant to the material excretion system.

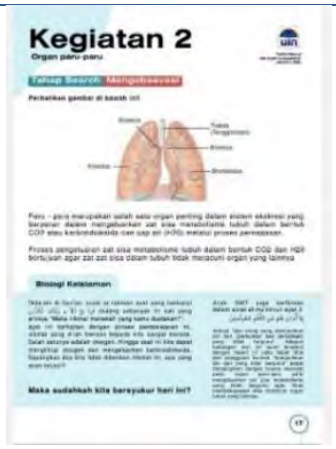
This is in accordance with the research of Fitriah & Rahmawati (2022) that teaching materials will have more significant benefits for students if combined with verses of the Qur'an. The inclusion of this religious content aims to unite religious science and modern sciences, Suciati et al (2022) explained that Islam and science are one unit. Chanifudin & Nuriyati (2020) also explained that science and religion are interrelated. Therefore, knowledge will not be separated from the knowledge of the Quran and Hadith, which there is no doubt about. However, from the validator, an expert on Islamic religious education, there were revisions to the organ system section of the holy al-Quran and additional interpretations or hadith. The results of the revision of the expert validator on Islamic religious education can be seen in Table 11.

Table 11. Revision Results of Islamic Religious Education experts.

Components	Before revision	After revision
There is a change in the verse of the Al-Qur'an, Surah At-Tin verse 4, into a Muslim History Hadith.		
There is a change in the verse of the al-Quran, surah az-zariyat verse 21 to surah an-nisa verse 56 and Ibn Kathir's interpretation		

There is an addition to Surah Al-Hajj verse 46

There is a change in the Al-Qur'an verse, surah al-mu'minun verse 3, to surah al-an'am verse 125 and surah Yasin verse 80.



Limited Trial

Limited trials were conducted to determine the level of readability and response from students to the developed e-worksheet. The results of this limited trial will be used as a guide to improve the e-worksheet before the trial is expanded. Then, it will produce SSCS-based e-worksheet products in the Islamic context that are ready for expanded trials. The trial was limited to students from XI MIPA 4 in MAN 1 Bogor, consisting of 9 students. The results of the analysis of the limited readability test questionnaire of SSCS-based e-worksheet in the Islamic context can be seen in Table 12.

Table 12. Readability questionnaire results

NO	Aspects Valuation	Percentage (%)	Criterion
1.	Language	100%	Very Proper
2.	Graphics	96,8%	Very Proper
3.	Feasibility Content of the material	98,6%	Very Proper
	Average	98,4%	Very Proper

Test Readability used to know whether the e-worksheet was easy understood by participants educated. Table 12 result analysis tests readability above done to participants educate, get known that the third component is very proper. In addition to filling out their readability test questionnaire, students were also asked to fill out the feasibility response questionnaire from the developed e-worksheet, which consisted of questions with three aspects of assessment. The results of the response to service analysis unlimited trials can be seen in Table 13.

Table 13. Results of student response questionnaire

No	Aspects Valuation	Percentage (%)	Criterion
1.	Practicality	88,3%	Very Proper
2.	Feasibility Content of the material	88,2%	Very Proper
3.	Graphics	92%	Very Proper
4.	Language	87,8%	Very Proper
	Average	**89%**	**Very Proper**

Table 13 shows the assessment results of the percentage of graphic aspects getting the highest percentage, 92%, which shows that the criteria are feasible compared to the other three aspects of the assessment. Nevertheless, it is still within the criteria of being very feasible. According to Sulviana (2016), aspects of graphic assessment include 1) Clarity of the images presented, 2) Effectiveness of the images presented, 3) Clarity of the use of letters in writing, and 4) Design every page is interesting. Therefore, the e-worksheet that has been designed shows that it is attractive and appropriate in terms of layout, image illustrations, colours, types, sizes, and letter shapes. So that it can increase the motivation to teach students.This is in accordance with the results of research by Mumtaza & Zulfiani (2023) that an attractive design on e-worksheet is an advantage that can attract students' learning interest in the learning process.

Expanded Trial

More extensive trials are carried out if they have passed the limited trial stage. This expanded trial aims to determine the assessment of e-worksheet that has been improved in the previous stage. In field trials involving one class to get a more significant response from research subjects. The questionnaire response collection was carried out by 32 students of grade XI MIPA 1 in MAN 1 Bogor. The results of the response questionnaire in the trial were expanded to see in Table 14.

Table 14. Results of student response questionnaire

No	Assessment Aspect	Percentage (%)	Criterion
1.	Practicality	90.2%	Very Proper
2.	Feasibility Content of the material	89.9%	Very Proper
3.	Graphics	89.4%	Very Worth It
4.	Language	89.3%	Very Proper
	Average	**89.7%**	**Very Worth** It

Based on Table 14, shows that the results of the practical assessment aspect of e-worksheet obtained the highest score compared to the other three aspects. However, all three aspects of the assessment obtained a percentage score above 80%, indicating very feasible criteria (Kahar & Layn, 2018). The practical aspect of obtaining a percentage score is the highest because the e-worksheet that has been developed is very practical and easy to use in the learning process, with a score of 90.2%, which shows very feasible criteria. This is under the explanation Rezeki & Adnan (2023) that the practicality test aims to determine the ease of use of e-worksheet has been developed. E-worksheet can be practical if the results of e-worksheet are carried out well, teachers respond well to LKPD, and students respond well to e-worksheet. Therefore, e-worksheet can make learning more active, effective, and efficient (Widanti & Aloysius, 2020).

The effectiveness of SSCS-based e-worksheet in the Islamic context

The effectiveness of the e-worksheet developed is reviewed from the pretest and posttest N-Gain value analysis results. The results of data analysis of science process skills can be seen in Table 15 and Table 16.

Table 15. SPS results of each indicator

SPS Indicators	Average Grade		N- Gain	Criterion
	Pretest	Posttest		
Observing breast milk	67.7	92.7	0.77	High
Applying the Concept	45.6	80	0.63	Medium
Interprenting	40	82.5	0.70	High
Usingan tools and materials	26.5	93.75	1.09	High

Based on Table 15, it shows that three SPS indicators obtained n-gain values with high criteria, and one

obtained n-gain values with medium criteria. So, the acquisition of each indicator during the pretest and posttest has increased. This shows the effectiveness of e-worksheet, which was developed based on the analysis of pretest and posttest n-gain values.

Indicators using tools and materials have increased significantly because, during learning activities using SSCS-based e-worksheet, the Islamic context, students are asked to do a Urine Content Test Practicum. This is under students who can do practicum well, one of which uses tools and materials. So that students can answer questions about indicators using tools and materials that show an n-gain value of 1,09 with high criteria. According to the presentation of Fitriana et al (2019) using tools and materials is essential for students in practicum. Students who cannot use tools and materials need help conducting experiments effectively.

The improvement of the lowest indicator is the indicator of applying the concept that acquires medium criteria. This is because some students, with a percentage of 9.3%, need help solving problems on the problem using their knowledge or concepts. Therefore, learners must continuously train in the skill of applying concepts. It is to the presentation of Masruhah et al (2022) that applying concepts is one of the skills that need to be strengthened so that students not only memorize concepts but can also apply them in various situations.

The observation indicator obtained an n-gain value of 0.77 in the high category. The observation indicators on the e-worksheet are visible when students collect data regarding urine observations and observations of excretory system organs. Students' observations aim to find facts related to the learning material. Observing activities carried out by students can provide more meaningful learning because students observe phenomena that exist in everyday life. Apart from that, observation activities help fulfil students' curiosity, so observation indicators are significant for training students to understand the learning material better (Muslimin, 2022).

The interpreting indicator obtained an n-gain value of 0.70 in the high category. The interpreting indicators in e-worksheet contain commands to answer questions based on observation results and link data obtained from observations with existing theories. This is to explain Yunita & Nurita (2021) that interpreting indicators is carried out by students, namely by connecting the results of observations or data that have been obtained, thereby helping students to conclude and expand learning through experience and develop ideas. New ideas that fit the theory. The results of calculating the average student score and the N-Gain percentage can be seen in Table 16.

Table 16. Results of calculating the average student score and N-Gain percentage

Value	Pretest	Postest
Lowest Value	13	40
Top Rated	80	100
Mean	44	84.96
Median	46	93
Mood	26	100
N-gain	0.77 (High)	

Based on Table 16 shows that in the pretest results the lowest value is 13 and the highest value is 80. Furthermore, an N-Gain test was also carried out to determine the effectiveness of e-worksheet. The N-Gain test value obtained is 0.77 with high criteria. The results of pretest, posttest, and N-Gain test scores show that the value of students' science process skills before and after using e-worksheet increases, and e-worksheet is effective and feasible to be used as teaching material in learning. This is in accordance with the results of research by Ardiansah & Zulfiani (2023) that e-worksheet has the advantage of facilitating access whenever and wherever students are. In addition, the use of e-worksheet also saves the use of paper so that it helps balance the environment. Ilmy et al (2022) also explained that the use of e-worksheet has proven to have a positive impact on students in terms of improved results coginitive learning This is because learning becomes more structured.

Conclusion

Based on the research results, the e-worksheet results are very feasible or excellent. This can be done through validity test results and student responses. The validity results of the e-worksheet obtained a score of 91% with the criteria "Very Eligible". Student responses to the e-worksheet in the extended trial by 32 class XI MIPA 1 students were obtained at 89.7% with very feasible criteria. The results of the SPS carried out on class XI MIPA 1 students produced an n-gain value of 0.77 in the "High" category. These data show that the e-worksheet based on Search Solve Create and Share (SSCS) in an Islamic context to improve science pose skills in the excretory system material developed has perfect criteria for application to biology learning. The use of e-worksheet shows the urgency of adapting technology in learning, which is essential to improve at the educational level.

Acknowledgment

Thank you to all parties who have helped both to supervisors, validators, principals, staff of MAN 1 Bogor, biology teachers, students and FITK UIN Syarif Hidayatullah Jakarta.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

Author Contributions

T. A. Elvanuari: conceptualization, methodology, design, analysis, writing original draft preparation, review and editing. **Z. Zulfiani:** analysis, evaluation, writing original draft preparation, review, and editing. **E. S. Rosyidatun:** analysis, evaluation, writing original draft preparation, review, and editing

References

Ahmadi, F., & Abdullah, I. (2021). *Villagein Education and Online Learning Technology. In the Era of Industrial Revolution 4.0 and Society 5.0*. Semarang: Qahar Publisher. https://books.google.co.id/books?id=byZBEAAAQBAJ&pg=PR4&dq=Desain+Pendidikan+dan+Teknologi+Pembelajaran+Daring.+Di+Era%0ARevolusi+Industri+4.0+dan+Society+5.0.&hl=id&newbks=1&newbks_redir=0&source=gb_mobile_search&sa=X&ved=2ahUKEwj9uZD64qqDAxVMT2wGHZFBD28

Aprinastuti, C. (2023). *Special Book For Media Tutorial ICT-Based Learning*. Yogyakarta: Stiletto Book.https://books.google.co.id/books?id=tt-8EAAAQBAJ&pg=PR1&dq=Special+Book+For+Media+Tutorial+ICT-Based+Learning.&hl=id&newbks=1&newbks_redir=0&source=gb_mobile_search&sa=X&ved=2ahUKEwjsofKw46qDAxWdzDgGHd_zAYkQ6AF6BAgLEAM%0A

Ardiansah, R., & Zulfiani. (2023). Development of interactive e-worksheet based on creative thinking skills on the concept of environmental change. *JPBI (Indonesian Journal of Biology Education)*, *9(2)*, 1–12. https://doi.org/10.22219/jpbi.v9i2.22389

Chanifudin, & Nuriyati, T. (2020). Integration of Science and Islam in Learning. *Asatiza : Journal of Education*, *1(2)*, 213–216. https://doi.org/10.18326/mudarrisa.v9i1

Fitriah, L., & Rahmawati, I. (2022). The Practicality of Magnetic Electricity Textbook Series 2 Loaded with Qur'anic Verses Using the Connecting-Organizing-Reflecting-Expanding Learning Model. *Scientific Journal of Physics Education*, *6(1)*, 1–9. https://doi.org/10.31571/saintek.v9i1.1539

Hake, R. R. (1999). *Analyzing Change/Gain Scores* [Indiana University]. https://web.physics.indiana.edu/sdi/AnalyzingChange-Gain.pdf

Ilmy, L. A., Muhammad, Z., & Amalia, R. (2022). Study of the use of LKPD-Electronic biodiversity concept on learning outcomes and critical thinking skills, Practice of the Science of Teaching. *Journal : Journal of Practitioners Education*, *1(2)*, 100–109. https://doi.org/10.58362/hafecspost.v1i2.12

Kahar, M. S., & Layn, M. R. (2018). Analysis of Student Responses in the Implementation of Problem-Solving-Oriented Worksheets. *Scientific Periodical of Physics Education*, *6(3)*, 296–302. https://ejournal.unesa.ac.id/index.php/journal-of-chemical-education/article/view/18708/17070

Komalasari, E. (2019). The Role of Teachers in Media and Learning Resources in the Era of Disruption. *Proceedings of the National Seminar on Education FKIP*, *2(1)*, 439–440. https://jurnal.uindatokarama.ac.id/index.php/p2bmes50/article/download/1149/713/

Kosasih, E. (2021). *Development of Teaching Materials*. Jakarta : Bumi Aksara. https://books.google.co.id/books?id=UZ9OEAAAQBAJ&printsec=frontcover&dq=kosasih+pengembangan+bahan+ajar&hl=id&newbks=1&newbks_redir=0&source=gb_mobile_search&sa=X&ved=2ahUKEwi646DJ4qqDAxU9SWwGHfSoCa0Q6AF6BAgHEAM%0A

Lele, D. R., & Diyah, A. W. (2022). Development of Student Worksheets (LKS) based on the Search, Solve, Create and Share (SSCS) learning model on the digestive system of eating. *Journal of Biology Education Study Program*, *12(1)*, 24–29. https://journal.uinsgd.ac.id/index.php/bioeduin/article/download/22254/8010

Lubis, A., & Lubis, M. H. N. (2021). *No Learning and assessment: complete with learning syntax, indicators and application of the problem grid grid*. Jakarta : Media Publishing. https://books.google.co.id/books?id=8n5OEAAAQBAJ&pg=PT34&dq=pembelajaran+dan+peni

laian:+Lengkap+dengan+sintaks&hl=id&newbks=1&newbks_redir=0&source=gb_mobile_search&sa=X&ved=2ahUKEwjI3NnJhayDAxUeaGwGHaNVDG8Q6AF6BAgFEAM

Masruhah, D. D., Rusdianto., & Wahyuni, S. (2022). Development of e-worksheet based on guided inquiry to improve the science process skills of junior high school students. *(Composition of Education Articles)*, *7(1)*, 170–182. https://doi.org/10.30998/sap.v7i1.12935

Masykur, R., Nofrizal., & Syazali, M. (2017). Development of Mathematics Learning Media with Macromedia Flash. *Al-Jabar: Journal of Mathematics Education*, *8(2)*, 181–192. https://ojs.unm.ac.id/icsat/article/view/39045

Mesterjon. (2021). *Theory and Concept of Learning System Management*. Yogyakarta: Deepublish. https://books.google.co.id/books?id=8CBLEAAAQBAJ&pg=PA101&dq=Teori+dan+Konsep+Manajemen+Sistem+Pembelajaran,&hl=id&newbks=1&newbks_redir=0&source=gb_mobile_search&sa=X&ved=2ahUKEwigzfri46qDAxWPS2wGHRByAhkQ6AF6BAgJEAM%0A

Miqro, F. L., & Baiq, N. H. Z. (2021). The Effectiveness of Electronic LKPD as a Learning Media during the Covid-19 Pandemic for Teachers at YPI Bidayatul Hidayah Ampenan. *Journal of Service Master of Science Education*, *4(2)*, 26–29. https://doi.org/10.29303/jpmpi.v4i2.668

Mulyono, Y. (2013). Implementation of the 2013 Curriculum for Islamic Integrated Biology Subjects in Madrasah Aliyah (MA): CIPPO Evaluation Model. *Transformative Journal*, *1(2)*, 249–265. https://doi.org/10.23971/tf.v1i2.714

Mumtaza., M. F., & Zulfiani. (2023). Development of Student Worksheets Based on Science Process Skills on Excretory System Concepts. *Journal of Science Education Research*, *9(1)*, 269–270. https://doi.org/10.29303/jppipa.v9i1.1474

Muslimin, Z. (2022). Testing The Validity Of Electronic Student Worksheets (Lkpd) Based On Science Process Skills On Digestive System Material Class XI SMA/MA. *Pensa E-Journal: Science Education*, *7(1)*, 85–90. https://doi.org/10.30605/biogenerasi.v7i1.1650

Pratiwi, D. E. (2021). Development of e-worksheet oriented to learning cycle 7E on bii germination sub-material to improve science process skills. *Scientific Periodical of Biology Education*, *10(3)*, 540–550. https://ejournal.unesa.ac.id/index.php/bioedu/article/download/38573/34016/

Pristiwanti, D., Bal, B., Sholeh, H., & Ratna, S. . (2022). understanding education. *Journal of Education and Counseling*, *4(6)*, 7912–7921. https://doi.org/10.31004/jpdk.v4i6.9498

Rezeki, S., & Adnan, A. A. A. (2023). LKPD Oriented HOTS on Class X Biology Material at Rantepao Christian High School. *Journal of Biology and Biology Learning*, *7(2)*, 220–223. http://jurnal.unmuhjember.ac.id/index.php/BIOMA/article/download/7775/4172

Sari, E. R., Haryadi, E. F., & Lestari, N. (2022). Pembelajaran Kontekstual untuk Melatih Kemampuan Literasi Sains Siswa. *QUANTUM: Jurnal Pembelajaran IPA Dan Aplikasinya*, *2(1)*, 1–4. https://doi.org/10.46368/qjpia.v2i1.551

Saringatun, M., Muhammad, R. P., & Miftahus, S. (2021). *Learning Planning in SEkolah*. Sukoharjo : Pradina Pustaka. https://books.google.co.id/books?id=0z9NEAAAQBAJ&pg=PA121&dq=perencanaan+pembelajaran+disekolah&hl=id&newbks=1&newbks_redir=0&source=gb_mobile_search&sa=X&ved=2ahUKEwjhhO-45KqDAxXc8DgGHV6WA8gQ6AF6BAgMEAM

Suciati, R., Susilo, H., & Gofur, A. (2022). Millennial students' perception on the integration of Islam and science in Islamic universities. *Indonesian Journal of Islam and Muslim Societies*, *12(1)*, 34–39. https://doi.org/10.18326/ijims.v12i1.31-57

Suhaili, S. S. M., Nurdin, N., & Taufiq, T. (2022). Tokopedia and Shopee Marketplace Performance Analysis Using Metrix Google Light-house. *International Journal of Engineering, Science and Information Technology*, *2(3)*, 106–110. https://doi.org/10.52088/ijesty.v2i3.312

Sulviana, F. (2016). Development of LKPD IPA Guided Inquiey to Improve Product Creativity of Junior High School / MTS Students. *Journal of Mathematics and Science Education*, *4(1)*, 80–89. https://doi.org/10.21831/jpms.v4i1.12419

Syafri, M., Zulkarnain, & Maimunah. (2020). The Effect of SSCS Learning Model on the Mathematical Problem Solving Ability of Junior High School Student. *Journal of Educational Sciences*, *4(2)*, 309–317. https://jes.ejournal.unri.ac.id/index.php/JES/article/view/7994/0

Wahyuni, E. N., Muhammad, Z., & R, A. (2022). The quality of electronic LKPD is based on critical thinking skills on the concept of ecology at the high school level. *Journal of Educational Sciences*, *1(2)*, 29–30. https://e-journal.iahn-gdepudja.ac.id/index.php/PS/article/download/382/265

Widanti, Y. B. R., & Aloysius, S. (2020). Analysis of Science Process Skills in Student Worksheet on Microorganism Topics for Senior High School. *Journal of Physics: Conference Series*, *2(1)*, 1–9. https://doi.org/10.1088/1742-6596/1440/1/012069

Widyasari, L. A. S., & Sarwanto, B. A. P. (2013). Biology learning using accelerated learning models through concept mapping and mind mapping in terms of students' creativity and verbal abilities. *INQUIRY: Journal of Science Education*, *2(3)*, 246–247. https://doi.org/10.20961/inkuiri.v2i03.9792

Windi, R. S., Azza, N. P., & Erda, M. (2022). Development of e-Workseet Bernardus Problem Based Learning integrated STEM on circulatory system material grade XI high school. *Journal of*

Biology Learning: Biology Studies and Learning, *9(1)*, 10–17. htpp://ejournal.unsri.ac.id /index.php/fpb

Wulandari, F. E. (2016). The Effect of Project-Based Learning Models to Train Student Process Skills. *Pedagogia: Journal of Education*, *5(2)*, 247–249. https://ejournal.umm.ac.id/index.php/jpbi/article/view/27461

Yunita, N., & Nurita, T. (2021). Analysis Of Students' Science Processing Skills In Online Learning. *Biogeneration Journal*, *9(3)*, 378–385. https://ejournal.unesa.ac.id/index .php/pensa/article/download/41088/36814/%0A