

Survey as used for: What Makes a Good Summary?

Investigating the Focus of Automatic Summarization in an Educational Context

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Submission Id: 215

ACM Reference Format:

Anonymous Author(s). 2021. Survey as used for: What Makes a Good Summary?: Investigating the Focus of Automatic Summarization in an Educational Context. In *Proceedings of The 44th International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR '21)*, July 11-15, 2021, Montréal, Québec. , 10 pages. <https://doi.org/10.1145/nnnnnnnn>. nnnnnnnn

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SIGIR '21, July 11-15, 2021, Montréal, Québec
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ACM ISBN 978-x-xxxx-xxxx-x/YY/MM.
<https://doi.org/10.1145/nnnnnnnn.nnnnnnnn>

1 VERBATIM SURVEY OVERVIEW

Table 1: A complete overview of the survey. This table includes the explanation that participants received, as well as all the questions and the answer options. If a question was the start of a branch, the direction of the branch has been written behind the answer options in *italic*. (This was never shown to the participants.) Note that the survey was performed in SurveyMonkey.¹ The survey had a lay-out as provided by SurveyMonkey, i.e., it consisted of different pages and colors were used to highlight certain important parts in texts.

Question Nr.	Question and Answer Options
Q1	<p>Introduction and Instructions</p> <p>Thank you for taking the time to fill out this survey! Before you start, please take the time to read these instructions carefully. If you still have any questions after reading the instructions, please send them to [anonymized]. We will give away 10 [anonymized] vouchers of 10 [anonymized currency] each among the participants. If you would like to take part in the raffle, you can leave your email address at the end of this survey.</p> <p>Goal of the study</p> <p>The goal of this survey is to get insight in how summaries help or can help you when studying.</p> <p>What the survey will look like</p> <p>In what follows you will get questions that aim to develop an understanding for:</p> <ul style="list-style-type: none"> • For which types of study material it is useful to have summaries • How these summaries can help you with your task • What these summaries should look like <p>We expect this survey to take approximately 10 minutes of your time.</p> <p>Use the next button to go to the next page once you have filled out all the questions on the page. Use the prev button to go back one page.</p> <p>About your privacy</p> <p>We value your privacy and will process your answers anonymously. The answers of all participants in this survey will be used to gain insight in how pre-made summaries can be helpful for different types of studying activities. The answers will be presented in a research paper about this topic. This will be done either in an aggregated manner, or by citing verbatim examples of the answers. Again, this will all be done anonymously.</p> <p>I agree that I have read and understood the instructions. I also understand that my participation in this survey is voluntarily.</p> <p><input type="checkbox"/> I agree</p>
Q2	<p>Important! Some background knowledge you need to know</p> <p>Throughout this survey we make use of the term pre-made summary. It is very important that you understand what this means. On this page we explain this term, so please make sure to read this carefully.</p> <p>Definition pre-made summary</p> <p>One type of summary is one that you make yourself. Another type of summary is one that has been made for you. In this survey, we focus on this latter type and we call them pre-made summaries.</p> <p>Who makes these pre-made summaries?</p> <p>These pre-made summaries can be made by a person, for example your teacher, your friend, a fellow student or someone at some official organisation, etc. The pre-made summaries can also be made by a computer.</p> <p>What kinds of summaries are we talking about?</p> <p>There are no restrictions on what these pre-made summaries can look like. On the contrary, that is one of the things we aim to find out with this survey! But, to give some examples, you could think of a written overview of a text book, highlights in text to draw your attention to important bits, blog posts, etc. These are really just examples and don't let them limit your creativity! You can come up with any example of a pre-made summary that is helpful for you.</p>

¹<http://surveymonkey.com>

Question Nr.	Question and Answer Options
	Yes, I understand what a pre-made summary is!
	<input type="checkbox"/> Yes
Q3	Please think back to your recent study activities. Examples of study activities can be: studying for an exam, writing a paper, doing homework exercises, etc. Note that these are just examples, any other study activity is fine too. Did you use a pre-made summary in any of these study activities?
	<input type="checkbox"/> Yes – <i>participants are led to Q6</i>
	<input type="checkbox"/> No – <i>participants are led to Q4</i>
Q4	Can you think of one of your recent study activities where a pre-made summary would have been useful for you?
	<input type="checkbox"/> Yes – <i>participants are led to Q25</i>
	<input type="checkbox"/> No – <i>participants are led to Q5</i>
Q5	Why do you think a pre-made summary would not have helped you with any of your recent study activities?
	Open response – <i>participants are led to Q48</i>
Start branch of participants who described an existing summary	
	If you have multiple study activities where you used a pre-made summary, please take the one where you found the pre-made summary most useful.
Q6	The original study material consisted of
	<input type="checkbox"/> Mainly text – <i>participants are led to Q8</i>
	<input type="checkbox"/> Mainly figures – <i>participants are led to Q7</i>
	<input type="checkbox"/> Mainly video – <i>participants are led to Q7</i>
	<input type="checkbox"/> Mainly audio – <i>participants are led to Q7</i>
	<input type="checkbox"/> A combination of some or all of the above – <i>participants are led to Q7</i>
	<input type="checkbox"/> I do not know, because I have not seen the study material – <i>participants are led to Q7</i>
	<input type="checkbox"/> Other (please specify) – <i>participants are led to Q7</i>
Q7	For now we narrow down our survey to study material that is mostly textual. Do you recall any other recent study activity where you made use of a pre-made summary and where the original study material mainly consisted of text?
	<input type="checkbox"/> Yes – <i>participants are led to Q8</i>
	<input type="checkbox"/> No – <i>participants are led to Q48</i>
Q8	What was the goal of this study activity?
	<input type="checkbox"/> Studying for an exam
	<input type="checkbox"/> Writing a paper / essay / report / etc.
	<input type="checkbox"/> Doing homework exercises
	<input type="checkbox"/> Other (please specify)

Question Nr.	Question and Answer Options
Q9	Who made this pre-made summary? <ul style="list-style-type: none"> <input type="checkbox"/> A teacher or teaching assistant <input type="checkbox"/> A fellow student <input type="checkbox"/> An official organisation <input type="checkbox"/> The authors of the original study material <input type="checkbox"/> A computer program <input type="checkbox"/> I am not sure, I found it online <input type="checkbox"/> Other (please specify)
Q10	<p>Now some questions will follow about what the study material that was summarized looked like.</p> What was the length of the study material? <ul style="list-style-type: none"> <input type="checkbox"/> A single article <input type="checkbox"/> Multiple articles <input type="checkbox"/> A single book chapter <input type="checkbox"/> Multiple book chapters from the same book <input type="checkbox"/> Multiple book chapters from various books <input type="checkbox"/> A combination of the above <input type="checkbox"/> I do not know because I have not seen the study material, only the summary <input type="checkbox"/> Other (please specify)
Q11	How was the study material structured? (Multiple answers possible) <ul style="list-style-type: none"> <input type="checkbox"/> There was no particular structure - e.g. just one large text <input type="checkbox"/> The text contained a title or titles <input type="checkbox"/> The text contained subheadings <input type="checkbox"/> The text consisted of different chapters <input type="checkbox"/> The text consisted of different sections and / or paragraphs <input type="checkbox"/> I do not know because I have not seen the study material, only the summary <input type="checkbox"/> Other (please specify)
Q12	What was the genre of the study material? <ul style="list-style-type: none"> <input type="checkbox"/> Mainly educational (such as a text book (chapter)) <input type="checkbox"/> Mainly scientific (such as an academic article, publication, report, etc) <input type="checkbox"/> Mainly nonfiction writing (such as (auto)biographies, history books, etc) <input type="checkbox"/> Mainly fiction writing (such as novels, short fictional stories, etc) <input type="checkbox"/> Other (please specify)
Q13	How would you classify the difficulty level of the study material? <ul style="list-style-type: none"> <input type="checkbox"/> Ordinary: most people would be able to understand it <input type="checkbox"/> Specialized: you need to know the jargon of the field to be able to understand it <input type="checkbox"/> Geographically based: you can only understand it if you are familiar with a certain area, for example because it contains local names

Question Nr.	Question and Answer Options												
Q14	<p>Now we will ask some questions about the purpose of the pre-made summary that you used.</p> <p>The summary was made specifically to help me (and potentially fellow students) with my study activity.</p> <table><tr><td>Strongly disagree</td><td>Disagree</td><td>Neither agree nor disagree</td><td>Agree</td><td>Strongly agree</td><td>I don't know</td></tr><tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr></table>	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	I don't know	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	I don't know								
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>								
Q15	<p>For what type of people was the summary intended? Your score can range from (1) Untargetted, to (5) Targetted.</p> <table><tr><td>Untargetted: No domain knowledge is expected from the users of the summary.</td><td>Targetted: Full domain knowledge is expected from the users of the summary.</td></tr><tr><td>(1)</td><td>(5)</td></tr><tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr></table>	Untargetted: No domain knowledge is expected from the users of the summary.	Targetted: Full domain knowledge is expected from the users of the summary.	(1)	(5)	<input type="checkbox"/>	<input type="checkbox"/>						
Untargetted: No domain knowledge is expected from the users of the summary.	Targetted: Full domain knowledge is expected from the users of the summary.												
(1)	(5)												
<input type="checkbox"/>	<input type="checkbox"/>												
Q16	<p>How did this summary help you with your task? (Multiple answers possible)</p> <ul style="list-style-type: none"><input type="checkbox"/> The summary helped to retrieve parts of the original study material<input type="checkbox"/> I used the summary to preview the text that I was about to read<input type="checkbox"/> I used the summary as a substitute for the original study material<input type="checkbox"/> I used the summary to refresh my memory of the original study material<input type="checkbox"/> I used the summary as a reminder that I had to read the original study material<input type="checkbox"/> The summary helped to get an overview of the original study material<input type="checkbox"/> The summary helped to understand the original study material<input type="checkbox"/> Other (please specify)												
Q17	<p>What was the type of the summary?</p> <ul style="list-style-type: none"><input type="checkbox"/> Lecture notes<input type="checkbox"/> Blog post<input type="checkbox"/> Highlights of some kind in the original study material<input type="checkbox"/> Abstractive piece of text, such as a written overview of a text book, an abstract of a paper, etc.<input type="checkbox"/> Short video<input type="checkbox"/> A slide show<input type="checkbox"/> Other (please specify)												
Q18	<p>How was the summary structured? (Multiple answers possible)</p> <ul style="list-style-type: none"><input type="checkbox"/> The summary was a running text, without particular structure<input type="checkbox"/> The summary consisted of highlights in the original study material, without particular structure<input type="checkbox"/> The summary itself contained special formatting, such as bold or cursive text, highlights, etc<input type="checkbox"/> The summary contained diagrams<input type="checkbox"/> The summary contained tables<input type="checkbox"/> The summary contained graphs<input type="checkbox"/> The summary contained figures<input type="checkbox"/> The summary contained headings<input type="checkbox"/> The summary consisted of different sections / paragraphs<input type="checkbox"/> Other (please specify)												

Question Nr.	Question and Answer Options				
Q19	How much of the study material was covered by the summary?				
	None of the study material was covered	Almost none of the study material was covered	Some of the study material was covered	Most of the study material was covered	All of the study material was covered
	(1)	(2)	(3)	(4)	(5)
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q20	What was the style of this summary?				
	<input type="checkbox"/> Informative: the summary simply conveyed the information that was in the original study material				
	<input type="checkbox"/> Indicative: the summary gave an idea of the topic of the study material, but not more				
	<input type="checkbox"/> Critical: the summary gave a critical review of the study material				
	<input type="checkbox"/> Aggregative: the summary put different source texts in relation to one another and by doing this gave an overview of a certain topic				
	<input type="checkbox"/> Other (please specify)				
Q21	Overall, how helpful was the pre-made summary for you? Your score can range from (1) Not helpful at all, to (5) Very helpful.				
	Not helpful at all				Very helpful
	(1)	(2)	(3)	(4)	(5)
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q22	Imagine you could turn this summary into your ideal summary. What would you change?				
	Open response				
Q23	Is there anything else you want us to know about the summary that we have not covered yet?				
	Open response				
Q24	Is there anything else you want us to know about the original study material that we have not covered yet?				
	Open response – <i>participants are led to Q40</i>				

Start branch of participants who described an imagined summary

	Please take one of these study activities in mind and imagine you would have had a pre-made summary.				
Q25	The original study material consisted of				
	<input type="checkbox"/> Mainly text – <i>participants are led to Q27</i>				
	<input type="checkbox"/> Mainly figures – <i>participants are led to Q26</i>				
	<input type="checkbox"/> Mainly video – <i>participants are led to Q26</i>				
	<input type="checkbox"/> Mainly audio – <i>participants are led to Q26</i>				
	<input type="checkbox"/> A combination of some or all of the above – <i>participants are led to Q26</i>				
	<input type="checkbox"/> Other (please specify) – <i>participants are led to Q26</i>				

Question Nr.	Question and Answer Options
Q26	<p>For now we narrow down our survey to study material that is mostly textual. Do you recall any other recent study activity where you could have used a pre-made summary and where the original study material mainly consisted of text?</p> <p><input type="checkbox"/> Yes – <i>participants are led to Q27</i></p> <p><input type="checkbox"/> No – <i>participants are led to Q48</i></p>
Q27	<p>What was the goal of this study activity?</p> <p><input type="checkbox"/> Studying for an exam</p> <p><input type="checkbox"/> Writing a paper / essay / report / etc.</p> <p><input type="checkbox"/> Doing homework exercises</p> <p><input type="checkbox"/> Other (please specify)</p>
Q28	<p>Now some questions will follow about what the study material that could be summarized looked like.</p> <p>What was the length of the study material?</p> <p><input type="checkbox"/> A single article</p> <p><input type="checkbox"/> Multiple articles</p> <p><input type="checkbox"/> A single book chapter</p> <p><input type="checkbox"/> Multiple book chapters from the same book</p> <p><input type="checkbox"/> Multiple book chapters from various books</p> <p><input type="checkbox"/> A combination of the above</p> <p><input type="checkbox"/> Other (please specify)</p>
Q29	<p>How was the study material structured? (Multiple answers possible)</p> <p><input type="checkbox"/> There was no particular structure - e.g. just one large text</p> <p><input type="checkbox"/> The text contained a title or titles</p> <p><input type="checkbox"/> The text contained subheadings</p> <p><input type="checkbox"/> The text consisted of different chapters</p> <p><input type="checkbox"/> The text consisted of different sections and / or paragraphs</p> <p><input type="checkbox"/> Other (please specify)</p>
Q30	<p>What was the genre of the study material?</p> <p><input type="checkbox"/> Mainly educational (such as a text book (chapter))</p> <p><input type="checkbox"/> Mainly scientific (such as an academic article, publication, report, etc)</p> <p><input type="checkbox"/> Mainly nonfiction writing (such as (auto)biographies, history books, etc)</p> <p><input type="checkbox"/> Mainly fiction writing (such as novels, short fictional stories, etc)</p> <p><input type="checkbox"/> Other (please specify)</p>
Q31	<p>How would you classify the difficulty level of the study material?</p> <p><input type="checkbox"/> Ordinary: most people would be able to understand it</p> <p><input type="checkbox"/> Specialized: you need to know the jargon of the field to be able to understand it</p> <p><input type="checkbox"/> Geographically based: you can only understand it if you are familiar with a certain area, for example because it contains local names</p>

Question Nr.	Question and Answer Options
Q32	<p>Now we will ask some questions about the purpose of the pre-made summary that would have been helpful.</p> <p>For what type of people should the summary ideally be intended? Your score can range from (1) Untargetted, to (5) Targetted.</p> <div> <div> <p>Untargetted: No domain knowledge is expected from the users of the summmary.</p> <p>(1)</p> <p><input type="checkbox"/></p> </div> <div> <p>(2)</p> <p><input type="checkbox"/></p> </div> <div> <p>(3)</p> <p><input type="checkbox"/></p> </div> <div> <p>(4)</p> <p><input type="checkbox"/></p> </div> <div> <p>Targetted: Full domain knowledge is expected from the users of the summmary.</p> <p>(5)</p> <p><input type="checkbox"/></p> </div> </div>
Q33	<p>How would this summary help you with your task? (Multiple answers possible)</p> <ul style="list-style-type: none"> <input type="checkbox"/> The summary would help to retrieve parts of the original study material <input type="checkbox"/> I would use the summary to preview the text that I was about to read <input type="checkbox"/> I would use the summary as a substitute for the original study material <input type="checkbox"/> I would use the summary to refresh my memory of the original study material <input type="checkbox"/> I would use the summary as a reminder that I had to read the original study material <input type="checkbox"/> The summary would help to get an overview of the original study material <input type="checkbox"/> The summary would help to understand the original study material', <input type="checkbox"/> Other (please specify)
Q34	<p>Now we will ask some questions about what the summary should look like and cover.</p> <p>What would be the ideal type of the summary?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lecture notes <input type="checkbox"/> Blog post <input type="checkbox"/> Highlights of some kind in the original study material <input type="checkbox"/> Abstractive piece of text, such as a written overview of a text book, an abstract of a paper, etc. <input type="checkbox"/> Short video <input type="checkbox"/> A slide show <input type="checkbox"/> Other (please specify)
Q35	<p>What is the ideal structure of the summary? (Multiple answers possible)</p> <ul style="list-style-type: none"> <input type="checkbox"/> The summary should be a running text, without particular structure <input type="checkbox"/> The summary should consist of highlights in the original study material, without particular structure <input type="checkbox"/> The summary itself should contain special formatting, such as bold or cursive text, highlights, etc. <input type="checkbox"/> The summary should contain diagrams <input type="checkbox"/> The summary should contain tables <input type="checkbox"/> The summary should contain graphs <input type="checkbox"/> The summary should contain figures <input type="checkbox"/> The summary should contain headings <input type="checkbox"/> The summary should consist of different sections / paragraphs <input type="checkbox"/> Other (please specify)

Question Nr.	Question and Answer Options
Q36	How much of the study material should be covered by the summary? None of the study material should be covered (1) <input type="checkbox"/> Almost none of the study material should be covered (2) <input type="checkbox"/> Some of the study material should be covered (3) <input type="checkbox"/> Most of the study material should be covered (4) <input type="checkbox"/> All of the study material should be covered (5) <input type="checkbox"/>
Q37	What should the style of this summary be? <input type="checkbox"/> Informative: the summary should simply convey the information that was in the original study material <input type="checkbox"/> Indicative: the summary should give an idea of the topic of the study material, but not more <input type="checkbox"/> Critical: the summary should give a critical review of the study material <input type="checkbox"/> Aggregative: the summary should put different source texts in relation to one another and by doing this give an overview of a certain topic <input type="checkbox"/> Other (please specify)
Q38	Is there anything else you would want us to know about your ideal summary that we have not covered yet? Open response
Q39	Is there anything else you would want us to know about the original study material that we have not covered yet? Open response
Look out questions	
Q40	Now, let's assume the pre-made summary was generated by a computer. You can assume that this machine generated summary captures all the needs you have identified in the previous questions. Would it make a difference to you whether the summary was generated by a computer program or by a human? <input type="checkbox"/> Yes – participants are led to Q41 <input type="checkbox"/> No – participants are led to Q43
Q41	Please explain the difference. Open response
Q42	Which type of summary would you trust more: <input type="checkbox"/> A summary generated by a human, for example a teacher or a good performing fellow student <input type="checkbox"/> A summary generated by a computer <input type="checkbox"/> No difference
Q43	Please explain your answer. Open response
Q44	Which type of summary would you trust more: <input type="checkbox"/> A summary generated by a human, for example a teacher or a good performing fellow student <input type="checkbox"/> A summary generated by a computer <input type="checkbox"/> No difference

Question Nr.	Question and Answer Options
Q45	<p>Now imagine that you can interact with the computer program that made the summary, in the form of a digital assistant. Imagine that your digital assistant made an initial summary for you and you can ask questions about it to your digital assistant and the assistant can answer them. Answers can be voice output, but also screen output, e.g. a written summary on the screen. In the next part we would like to investigate how you would interact with the assistant. Please do not feel restricted by the capabilities of today's digital assistants.</p> <p>Please choose the three most useful features for a digital assistant to have in this scenario.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Summarize particular parts of the study material with more detail <input type="checkbox"/> Summarize particular parts of the study material with less detail <input type="checkbox"/> Switch between different summary styles (for example highlighting vs a generated small piece of text) <input type="checkbox"/> Explain why particular pieces ended up in the summary <input type="checkbox"/> Provide the source of certain parts of the summary on request <input type="checkbox"/> Search for different related sources based on the content of the summary <input type="checkbox"/> Answer specific questions based on the content of the summary
Q46	<p>Please choose the three least useful features for a digital assistant to have in this scenario.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Summarize particular parts of the study material with more detail <input type="checkbox"/> Summarize particular parts of the study material with less detail <input type="checkbox"/> Switch between different summary styles (for example highlighting vs a generated small piece of text) <input type="checkbox"/> Explain why particular pieces ended up in the summary <input type="checkbox"/> Provide the source of certain parts of the summary on request <input type="checkbox"/> Search for different related sources based on the content of the summary <input type="checkbox"/> Answer specific questions based on the content of the summary
Q47	<p>Can you think of any other features that you would like your digital assistant to have to help you in this scenario?</p> <p>Open response</p>
Background questions	
Q48	<p>Thank you for filling out this survey so far! We would still like to ask you two final background questions.</p> <p>What is the current level of education you are pursuing?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Bachelor's degree <input type="checkbox"/> Master's degree <input type="checkbox"/> MBA <input type="checkbox"/> Other, please specify
Q49	<p>What is your main field of study?</p> <p>Open response</p>
Thank you!	
Q50	<p>You have come to the end of our survey. Thanks a lot for helping out! We very much appreciate your time.</p> <p>If you would like to participate in the raffle to win a voucher, please fill out your e-mail address below. We will only use this e-mail address to blindly draw 10 names who win a voucher and to contact you if your name has been drawn.</p> <p>Open response</p>