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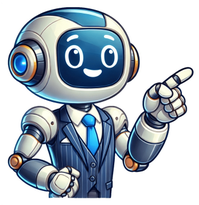

100%(2)100% found this document useful (2 votes)5K views5 pagesThe document discusses the key differences between theoretical and empirical literature reviews. A theoretical literature review focuses on examining existing theories, concepts, and framewoSaveSave Difference Between Theoretical and Empirical Liter... For Later100%100% found this document useful, undefined100%(2)100% found this document useful (2 votes)5K views5 pagesThe document discusses the key differences between theoretical and empirical literature reviews. A theoretical literature review focuses on examining existing theories, concepts, and frameworks related to the research topic, with the goal of establishing a conceptual framework. An empirical literature review focuses on summarizing and critiquing previous empirical studies to evaluate empirical evidence related to the research question. Both theoretical and empirical reviews are important for academic research, with theoretical reviews providing context and frameworks, and empirical reviews assessing methodologies and evidence.100%(2)100% found this document useful (2 votes)5K views5 pagesThe document discusses the key differences between theoretical and empirical literature reviews. A theoretical literature review focuses on examining existing theories, concepts, and framewo Constructing a comprehensive and concise literature review demands careful attention and precision. Navigating the vast sea of information and determining its significance can be a complex task. This article aims to delve into three fundamental components that are indispensable to a well-structured literature review. By understanding and adeptly incorporating components of literature review, you can establish a robust foundation for your research.Figure: Components of Literature Review1. The Theoretical Framework: Lets begin by examining the first essential component the theoretical framework, also known as the foundation of theory. The theoretical framework marks the inception of your literature review, serving as the cornerstone upon which your studys conceptual framework is built. Its important to distinguish between the theoretical framework and the conceptual framework, as they serve distinct purposes.Within the theoretical framework, several pivotal aspects need attention:a. Definition of Key Constructs and Variables: This involves offering precise definitions of the central terms and variables in your study. Addressing potential ambiguities in interpretation and explaining your chosen definitions is essential. Additionally, discussing underlying assumptions and justifying their relevance to your study is crucial.b. Interrelationships Between Variables and Constructs: Exploring the relationships among variables and constructs is another critical facet. This unveils the connections between different elements, providing a comprehensive understanding of your research.c. Relevant Existing Theories: Your theoretical framework should encompass a discussion of existing theories that align with your research objectives and questions. Introducing these theories and explaining how they shape your studys direction demonstrates their influence on your research.2. The Empirical Research: The second essential component is the empirical research section. This component involves a thorough analysis of existing empirical studies that pertain to your research objectives and questions. Empirical research encompasses studies that involve real-world data collection and analysis, encompassing both qualitative and quantitative methodologies. This differs from theoretical literature, which derives conclusions from logical reasoning rather than empirical evidence.A comprehensive analysis of existing empirical research goes beyond mere summarization. It necessitates a critical examination that addresses key questions:a. Variability in Findings: Investigate the findings of different studies in relation to your research questions. Do consistent outcomes emerge, or do discrepancies exist? Identifying patterns in findings helps establish the current knowledge landscape.b. Contextual Considerations: Explore the contexts covered by prior research. Are there specific geographical areas, cultural contexts, or demographics that remain unexplored? Identifying these gaps highlights areas where further investigation is needed.c. Methodologies Employed: Analyze the methodologies employed in earlier studies. How can these methodologies inform your own research approach? Understanding the strengths and limitations of different methodologies is crucial for refining your studys methodology.d. Limitations and Discrepancies: Critically assess the limitations of previous studies. Recognizing these limitations sheds light on areas where your research can contribute significantly.3. The Research Gap: The third vital component is the exploration of the research gap. This refers to unexplored or inadequately addressed areas within the existing body of academic knowledge. A research gap emerges when uncertainties or unresolved questions persist on specific topics or issues.Identifying a research gap involves synthesizing the information discussed in the theoretical framework and empirical research sections:a. Conflicting Findings: Discrepancies or conflicting findings in empirical studies can signal areas where clarity is needed. If different studies yield inconsistent results, this highlights the need for further investigation.b. Unexplored Contexts: Recognize contexts that have been insufficiently covered in existing research. If certain geographical regions, cultural groups, or demographics have been overlooked, these gaps present opportunities for new insights.c. Theoretical Ambiguities: Ambiguities or unanswered questions within existing theories can indicate gaps in understanding. Addressing these ambiguities through your research contributes to filling these gaps.The identification of a research gap serves as the driving force behind your study. Your literature review highlights areas of limited knowledge or unresolved questions, establishing the foundation for your research to address these gaps.In conclusion, a strong literature review relies on three important components; the theoretical framework, empirical research, and research gap. The theoretical framework sets up the main ideas, explains key terms, and talks about existing theories. Empirical research looks at real-world studies and figures out what patterns or gaps there are. But the most important part is the research gap its like finding missing pieces in a puzzle. By combining these three parts, your literature review helps your research make sense, shows what other people have found, and explains why your research is important.Frequently Asked Questions [FAQs]:What is a literature review?A literature review is a comprehensive and critical summary of existing research and knowledge on a specific topic. It involves analyzing, evaluating, and synthesizing relevant sources to provide an overview of what has been studied, what gaps exist, and what areas need further exploration.Why is a literature review important?A literature review serves as the foundation for your research by helping you understand the current state of knowledge, identifying gaps or unanswered questions, and justifying the need for your study. It demonstrates your familiarity with existing research and guides your research direction.How do I choose sources for my literature review?Select sources that are credible, relevant, and recent. Academic journals, books, conference proceedings, and reputable websites can be good sources. Make sure to include a mix of primary research studies, theoretical frameworks, and expert opinions.What is the difference between a theoretical framework and a conceptual framework?A theoretical framework is a structure of theories and concepts that underpin your study, while a conceptual framework is a visual representation of how these theories and concepts interact. Theoretical frameworks explain what youre investigating, while conceptual frameworks show how variables are related.How do I identify a research gap?Research gaps are areas where theres limited or conflicting information in the existing literature. You can identify them by looking for inconsistencies in findings, unexplored contexts, or unresolved questions. These gaps form the basis for your researchs significance.How do I organize my literature review?There are different ways to structure a literature review. Common approaches include chronological (by publication date), thematic (by topic or theme), and methodological (by research methods). Choose a structure that best fits your research goals.Can I include my opinions in a literature review?A literature review should be objective and focused on summarizing existing research. While you can provide critical analysis and interpretations of the sources, personal opinions should be minimized. The goal is to present a balanced overview of the literature.How do I cite sources in my literature review?Follow the citation style required by your academic institution or publisher. Common styles include APA, MLA, and Chicago. Make sure to properly attribute all ideas, data, and information that youve borrowed from other sources.How do I know when my literature review is complete?A literature review is never truly complete as research is ongoing. However, your review should cover the key studies, theories, and concepts relevant to your research. It should address your research objectives, present a clear research gap, and provide the context for your study.Can I use old sources in my literature review?While some classic sources might provide foundational information, its generally recommended to prioritize recent sources. This ensures that your literature review reflects the most current state of knowledge in your field. A Plain-Language Explainer With Practical Examples By: Derek Jansen (MBA) | Reviewer: Eunice Rautenbach (DTech) | July 2023 Writing a comprehensive but concise literature review is no simple task. Theres a lot of ground to cover and it can be challenging to figure out whats important and whats not. In this post, well unpack three essential ingredients that need to be woven into your literature review to lay a rock-solid foundation for your study. As a starting point, its important to clarify that the three ingredients well cover in this video are things that need to feature within your literature review, as opposed to a set structure for your chapter. In other words, there are different ways you can weave these three ingredients into your literature review. Regardless of which structure you opt for, each of the three components will make an appearance in some shape or form. If youre keen to learn more about structural options, weve got a dedicated post about that here. Lets kick off with the first essential ingredient that is the theoretical framework, also called the foundation of theory.The foundation of theory, as the name suggests, is where youll lay down the foundational building blocks for your literature review so that your reader can get a clear idea of the core concepts, theories and assumptions (in relation to your research aims and questions) that will guide your study. Note that this is not the same as a conceptual framework.Typically youll cover a few things within the theoretical framework:Firstly, youll need to clearly define the key constructs and variables that will feature within your study. In many cases, any given term can have multiple different definitions or interpretations for example, different people will define the concept of integrity in different ways. This variation in interpretation can, of course, wreak havoc on how your study is understood. So, this section is where youll pin down what exactly you mean when you refer to X, Y or Z in your study, as well as why you chose that specific definition. Its also a good idea to state any assumptions that are inherent in these definitions and why these are acceptable, given the purpose of your study.Related to this, the second thing youll need to cover in your theoretical framework is the relationships between these variables and/or constructs. For example, how does one variable potentially affect another variable does A have an impact on B, B on A, and so on? In other words, you want to connect the dots between the different things of interest that youll be exploring in your study. Note that you only need to focus on the key items of interest here (i.e. those most central to your research aims and questions) not every possible construct or variable.Lastly, and very importantly, you need to discuss the existing theories that are relevant to your research aims and research questions. For example, if youre investigating the uptake/adoption of a certain application or software, you might discuss Davis Technology Acceptance Model and unpack what it has to say about the factors that influence technology adoption. More importantly, though, you need to explain how this impacts your expectations about what you will find in your own study. In other words, your theoretical framework should reveal some insights about what answers you might expect to find to your research questions.If this sounds a bit fluffy, dont worry. We deep dive into the theoretical framework (as well as the conceptual framework) and look at practical examples in Literature Review Bootcamp. You can learn more about that here. Onto the second essential ingredient, which isempirical research. This section is where youll present a critical discussion of the existing empirical research that is relevant to your research aims and questions.But what exactly is empirical research?Simply put, empirical research includes any study that involves actual data collection and analysis, whether thats qualitative data, quantitative data, or a mix of both. This contrasts against purely theoretical literature (the previous ingredient), which draws its conclusions based exclusively on logic and reason, as opposed to an analysis of real-world data.In other words, theoretical literature provides a prediction or expectation of what one might find based on reason and logic, whereas empirical research tests the accuracy of those predictions using actual real-world data. This reflects the broader process of knowledge creation in other words, first developing a theory and then testing it out in the field.Long story short, the second essential ingredient of a high-quality literature review is a critical discussion of the existing empirical research. Here, its important to go beyond description. Youll need to present a critical analysis that addresses some (if not all) of the following questions:What have different studies found in relation to your research questions?What contexts have (and havent been covered)? For example, certain countries, cities, cultures, etc.Are the findings across the studies similar or is there a lot of variation? If so, why might this be the case?What sorts of research methodologies have been used and how could these help me develop my own methodology?What were the noteworthy limitations of these studies?Simply put, your task here is to present a synthesis of whats been done (and found) within the empirical research, so that you can clearly assess the current state of knowledge and identify potential research gaps, which leads us to our third essential ingredient. The third essential ingredient of a high-quality literature review is a discussion of the research gap (or gaps).But what exactly is a research gap?Simply put, a research gap is any unaddressed or inadequately explored area within the existing body of academic knowledge. In other words, a research gap emerges whenever theres still some uncertainty regarding a certain topic or question.For example, it might be the case that there are mixed findings regarding the relationship between two variables (e.g., job performance and work-from-home policies). Similarly, there might be a lack of research regarding the impact of a specific new technology on peoples mental health. On the other end of the spectrum, there might be a wealth of research regarding a certain topic within one country (say the US), but very little research on that same topic in a different social context (say, China).These are just random examples, but as you can see, research gaps can emerge from many different places. Whats important to understand is that the research gap (or gaps) needs to emerge from your previous discussion of the theoretical and empirical literature. In other words, your discussion in those sections needs to start laying the foundation for the research gap.For example, when discussing empirical research, you might mention that most studies have focused on a certain context, yet very few (or none) have focused on another context, and theres reason to believe that findings may differ. Or you might highlight how theres a fair deal of mixed findings and disagreement regarding a certain matter. In other words, you want to start laying a little breadcrumb trail in those sections so that your discussion of the research gap is firmly rooted in the rest of the literature review.But why does all of this matter? Well, the research gap should serve as the core justification for your study. Through your literature review, youll show what gaps exist in the current body of knowledge, and then your study will then attempt to fill (or contribute towards filling) one of those gaps. In other words, youre first explaining what the problem is (some sort of gap) and then proposing how youll solve it. To recap, the three ingredients that need to be mixed into your literature review are:The foundation of theory or theoretical frameworkThe empirical or evidence-based researchThe research gapAs we mentioned earlier, these are components of a literature review and not (necessarily) a structure for your literature review chapter. Of course, you can structure your chapter in a way that reflects these three components (in fact, in some cases that works very well), but its certainly not the only option. The right structure will vary from study to study, depending on various factors.If youd like to get hands-on help developing your literature review, be sure to check out our private coaching service, where we hold your hand through the entire research journey, step by step. The difference between theoretical and empirical research is fundamental to scientific, scholarly research, as it separates the development of ideas and models from their testing and validation.These two approaches are used in many different fields of inquiry, including the natural sciences, social sciences, and humanities, and they serve different purposes and employ different methods.Watch Video >> Difference between Theoretical and Empirical Research (Theoretical vs Empirical Research)Theoretical research involves the development of models, frameworks, and theories based on existing knowledge, logic, and intuition.It aims to explain and predict phenomena, generate new ideas and insights, and provide a foundation for further research.Theoretical research often takes place at the conceptual level and is typically based on existing knowledge, data, and assumptions.In contrast, empirical research involves collecting and analysing data to test theories and models.Empirical research is often conducted at the observational or experimental level and is based on direct or indirect observation of the world.Empirical research involves testing theories and models, establishing cause-and-effect relationships, and refining or rejecting existing knowledge.Theoretical research is often seen as the starting point for empirical research, providing the ideas and models that must be tested and validated.Theoretical research can be qualitative or quantitative and involve mathematical models, simulations, and other computational methods.Theoretical research is often conducted in isolation, without reference to primary data or observations.On the other hand, empirical research is often seen as the final stage in the scientific process, as it provides evidence that supports or refutes theoretical models.Empirical research can be qualitative or quantitative, involving surveys, experiments, observational studies, and other data collection methods.Empirical research is often conducted in collaboration with others and is based on systematic data collection, analysis, and interpretation.It is important to note that theoretical and empirical research are not mutually exclusive and can often complement each other.For example, empirical data can inform the development of theories and models, and theoretical models can guide the design of empirical studies.The most valuable research combines theoretical and empirical approaches in many fields, allowing for a comprehensive understanding of the studied phenomena.FeatureTHEORETICAL RESEARCHEMPIRICAL RESEARCHPurposeTo develop ideas and models based on existing knowledge, logic, and intuitionTo test and validate theories and models using data and observationsMethodBased on existing knowledge, data, and assumptionsBased on direct or indirect observation of the worldFocusConceptual level, explaining and predicting phenomenaObservational or experimental level, testing and establishing cause-and-effect relationshipsApproachQualitative or quantitative, often mathematical or computationalQualitative or quantitative, often involving surveys, experiments, or observational studiesData CollectionOften conducted in isolation, without reference to data or observationsOften conducted in collaboration with others, based on systematic data collection, analysis, and interpretationDifference between Theoretical vs Empirical ResearchIt is important to note that this table is not meant to be exhaustive or prescriptive but rather to provide a general overview of the main difference between theoretical and empirical research.The boundaries between these two approaches are not always clear, and in many cases, research may involve a combination of theoretical and empirical methods.Assumptions and simplifications may be made that do not accurately reflect the complexity of real-world phenomena, which is one of its limitations. Theoretical research relies heavily on logic and deductive reasoning, which can sometimes be biased or limited by the researchers assumptions and perspectives.Furthermore, theoretical research may not be directly applicable to real-world situations without empirical validation. Applying theoretical ideas to practical situations is difficult if no empirical evidence supports or refutes them.Furthermore, theoretical research may be limited by the availability of data and the researchers ability to access and interpret it, which can further limit the validity and applicability of theories.There are many limitations to empirical research, including the limitations of the data available and the quality of the data that can be collected. Data collection can be limited by the resources available to collect the data, accessibility to populations or individuals of interest, or ethical constraints.The researchers or participants may also introduce biases into empirical research, resulting in inaccurate or unreliable findings.Lastly, due to confounding variables or other methodological limitations, empirical research may be limited by the inability to establish causal relationships between variables, even when statistical associations are identified.In theoretical research, deductive reasoning, logical analysis, and conceptual frameworks generate new ideas and hypotheses. To identify gaps and inconsistencies in the present understanding of a phenomenon, theoretical research may involve analyzing existing literature and theories.To test hypotheses and generate predictions, mathematical or computational models may also be developed.Researchers may also use thought experiments or simulations to explore the implications of their ideas and hypotheses without collecting empirical data as part of theoretical research.Theoretical research seeks to develop a conceptual framework for empirically testing and validating phenomena.Methods used in empirical research depend on the research questions, type of data collected, and study design. Surveys, experiments, observations, case studies, and interviews are common methods used in empirical research.An empirical study tests hypotheses and generates new knowledge about phenomena by systematically collecting and analyzing data.These methods may utilize standardized instruments or protocols for data collection consistency and reliability. Statistical analysis, content analysis, or qualitative analysis may be used for the data collection type.As a result of empirical research, the findings can inform theories, models, and practical applications.In conclusion, theoretical and empirical research are two distinct but interrelated approaches to scientific inquiry, and they serve different purposes and employ different methods.Theoretical research involves the development of ideas and models, while empirical research involves testing and validating these ideas.Both approaches are essential to research and can be combined to provide a more complete understanding of the world. Now lets try to understand the theoretical framework of a literature review.As adjectives the difference between theoretical and empirical is that theoretical is of or relating to theory; abstract; not empirical while empirical is pertaining to or based on experience Differences between the empirical and theoretical What is a theoretical definition in research?A theoretical definition is a proposed way of thinking about potentially related events. Theoretical definitions contain built-in theories; they cannot be simply reduced to describing a set of observations. A theoretical definition of a term can change, over time, based on the methods in the field that created it.What should be included in theoretical review?Clearly describe the framework, concepts, models, or specific theories that underpin your study. This includes noting who the key theorists are in the field who have conducted research on the problem you are investigating and, when necessary, the historical context that supports the formulation of that theory.What is the difference between theoretical framework and theoretical review?What is the Difference Between Literature Review and Theoretical Framework. The literature review explores what has already been written about the topic under study in order to highlight a gap, whereas the theoretical framework is the conceptual and analytical approach the researcher is going to take to fill that gap.What is the difference between empirical review and theoretical review?Empirical or Theoretical? Empirical: Based on data gathered by original experiments or observations. Theoretical: Analyzes and makes connections between empirical studies to define or advance a theoretical position.What is the theoretical literature review?The theoretical literature review help establish what theories already exist, the relationships between them, to what degree the existing theories have been investigated, and to develop new hypotheses to be tested.What is theoretical review research?Theoretical review explores theories that expound on the topic under study and which, thereby help in better understanding of the study in question while at the same time putting forth a justification for the current study.What is an example of a theoretical definition?The definition of theoretical is something that is based on an assumption or opinion. An example of theoretical is lower interest rates will boost the housing market.How do you write a theoretical literature review?When writing your review, keep in mind these issues.Use Evidence. A literature review section is, in this sense, just like any other academic research paper. Be Selective. Use Quotes Sparingly. Summarize and Synthesize. Keep Your Own Voice. Use Caution When Paraphrasing.What comes first literature review or theoretical framework?In most studies, the literature review must come first and then followed by the theoretical framework. In the typical IMRAD (Introduction, Method, Results, Discussion) structure, the literature review comes before the theoretical section.What is theoretical and empirical?Empirical: Based on data gathered by original experiments or observations. Theoretical: Analyzes and makes connections between empirical studies to define or advance a theoretical position.How do you identify a theory in a literature review?Name the theory. Discuss the origins of the theory, who developed it, and how it has been tested and applied. Identify your research question and hypothesis based on the theory. Using the theory, explain how you expect your variables to relate or effect one another.What are the four major theoretical perspectives?The approach is to take four major theoretical perspectives social cognition, Social Identity Theory (SIT), social representations, and discursive psychology and compare how each understands particular phenomena, such as attitudes, attribution, prejudice, perception, the self, intergroup relations and ideology. What does theoretical approach mean?A theoretical approach attempts to understand the root causes of something, and construct a predictive model that explicitly says when the event will happen again. Theoretical approaches are more often used in branches of knowledge where causes are better understood, such as physics or geology. How to write a theoretical framework?Identify your key concepts The first step is to pick out the key terms from your problem statement and research questions. you can determine how other researchers have defined and drawn connections between these key concepts. Show how your research fits in What are some examples of theoretical perspectives?The two examples of Theoretical Perspectives on Families that will be explained are Feminist theory and Symbolic interactions. Feminist perspective or theory refers to gender and the inequity of power in society and especially in family life (Strong, DeVault, and Cohen 43). Before writing Chapter Two of your research project, you are expected to have completed chapter one, which is the foundation on which the review will be based. This segment of your research work is most often titled Literature Review or Review of Related Literature.What is Literature Review?A literature review refers to the systematic search, collection and breakdown of existing scholarly journals, articles, textbooks and other literal publications.By conceptualization, a literature review can be seen as a deliberate examination of works of literature or scholarly works written in a given field of study. The literature review is of many types. It could be evaluative, exploratory, instrumental, or systematic.Typically, a literature review showcases the current state of knowledge in a given field and scientific findings. Moreover, breakthroughs in a given subject, gaps in knowledge in a given field, and theoretical and methodological scholarly works in a given field of study.Literature reviews significantly differ from a book review and are often written as part of a research thesis both at undergraduate, graduate and postgraduate levels. A literature review is also an important aspect of journal papersand research proposals (s), among others.Majorly, information for literature reviews is obtained from secondary sources, and, as such, may or may not embody any new idea or approach.In dissertation or thesis writing, literature reviews form a significant part of the work and often are the most voluminous, requiring lots of citations, effort, logical thinking and time.Literature review entails the presentation of well-structured, articulated and organized reports of scholarly works on topics similar to the current research topic.In thesis writing, it is expected that the literature review should sufficiently provide information on the knowledge milestone in the given study and highlight areas of need.This is achieved through the careful selection, collection and review of extensive research work, which shares some similarities with the current study; this similarity is often seen in the variables the current study seeks to discuss.For instance, a researcher is working on ascertaining the factors that foster teenage pregnancy in Delta State. The research can go ahead to review other research studies which have teenage pregnancy as one of its variables.Before you dive into writing your literature review, the following to-do list should be adhered to:Search for scholarly works done, which are related to your topic, both in soft and hard copy. This means that your literature source should not be based on internet sources alone; it should include published textbooks and print journals.Choose from the list of literature available. While selecting, ensure to pick those closely related to the current studys scope, research problem or the current studys general objectives.Read thoroughly the works of literature selected for review, and take notes by extracting the information needed from the said research studies.After you might have finished reading and internalizing the selected works of literature to be reviewed, take action. Act on the information extracted. Always remember to present them in a manner that aids understanding and shows the logical sequence.We trust we were able to help you get started with writing the literature review of your work. However, our team of talented writers is available online to provide you with all the assistance you may need.We are also open to attending your research works, such as assignments, seminars, and term papers. Just contact us today, and a trial will convince you.Your discipline will determine the format of chapter two of your work. However, most often, chapter two of a research thesis is discussed under the following subtitle;Introduction: This provides a brief insight into the issues that will be discussed in chapter two as well as the organization of chapter twoConceptual framework: your conceptual framework should be done in a manner which depicts logical linkages of central themes in your line of research. A good conceptual framework represents the interrelatedness of central issues in the research through a diagram. For instance, a researcher is working on a topic titled The prevalence of sexually transmitted diseases (STD) among female adolescents in Ika, Delta State, Nigeria. Lets assume we are writing a conceptual framework for this topic.Conceptual framework Sexually transmitted diseases have been proven to affect womens health, and adolescent girls are inclusive in so many ways. A sexually transmitted disease refers to a disease which is transferred from one person to another during the processes of sexual intimacy.They include such diseases as staphylococcus, syphilis, and gonorrhoea, among others. Evidence from research studies in this line of study has revealed that these diseases, when left untreated, could greatly impede the health of their victims, as they can give rise to several health complications, including infertility, lowered immunity, and even death.Chapter Two Format and Guide to Literature Review, Empirical Review, and Theoretical FrameworkWe have successfully created a pictorial representation of the various concepts, which will be further elaborated on in this study segment; hence, the researcher expects to elaborate on these concepts critically.In the theoretical framework, various theories propounded by researchers in the current research line of study is reviewed. In writing a theoretical framework, it is expected that the research refers to two to three theories, depending on the number of variables being researched, such information as to its founder, assumptions, and suitability for the current study should also be stated by the researcher.In the empirical review, the researcher explores various empirical studies conducted by other researchers on topics related to the current research. Empirical research entails giving a comprehensive report of another researchers work. For instance,Okafor (2018) conducted a study on the role of rape in the spread of sexually transmitted diseases among adolescent girls in Ika local government of Delta state. The researcher was geared on ascertaining the causes of rape among ., to determine the relationship between rape and victims vulnerability to STDs.A survey research design was adopted, while the population of the study comprised of 100 adolescent girls who were randomly selected from 20 villages made up the local government.Data was collected through a questionnaire and was analyzed using statistical packages for social scientists (SPSS); from the data analyzed, the study found that rape increases the vulnerability of victims to such STDs as Hiv/Aids, gonorrhoea, staphylococcus, syphilis, among others.Hence, the study recommended that rape victims be encouraged to seek medical attention, which will enable them to get medical help.You must report the same process for all other empirical studies you want to review.At this point, you are expected to present all you have done in your chapter in brief sentences. For most undergraduate research studies, chapter two terminates here. However, for post-graduate studies, such sub-titles as Gap in Knowledge and contribution to knowledge are present and discussed before the summary of reviewed literature.Here, the researcher provides a comprehensive list of all the works of literature he/she consulted while carrying out the study, as well as detailed information on all the authors cited or quoted in the work.Practical steps to writing a literature ReviewAs an undergraduate, Master or Doctorate student, one of the challenges you will face is your final year project, especially chapter two, which is called Review of Literature or Literature Review; it is, therefore, necessary that you learn how it is written.The term literature review is not merely a summary of all articles you have reviewed in the course of your project but rather the critical analysis of the relationships between your reviews of other works in relation to your specific topic of interest. Before you begin writing your literature review, you would, have a thesis and have done your preliminary pages and introduction.The first thing you would do is collate a list of works that you would be reviewing. For example, if you working on the theme of Racism in Chimamanda Ngozi Adichies Americanah, you would research all novels, books and essays on racism that has ever been written; this will guide you through critical works of literature that have been written aforetime.The next would be to skim through the articles and make notes, abstracts and introductions from each of the works you are reviewing. Also, create topics and sub-topics and define terms your readers might want to know. After this, you will outline your review in a tabular form, ensuring your ideas are linked. For example:2.1. Racism as at 19th century2.2. Evolution of Racist Behaviour2.3. Racism in Contemporary timesOf course, this is just an example, but I am sure it has given you insights into what I am trying to explain. Writing a review can cause a bit of panic but (Galvan, 2006: 81-90) has created a simple and understandable way to do it:Identify the broad problem area, but avoid global statementsEarly in the review, indicate why the topic being reviewed is importantDistinguish between research finding and other sources of informationIndicate why certain studies are importantIf you are commenting on the timeliness of a topic, be specific in describing the time frameIf citing a classic or landmark study, identify it as suchIf a landmark study was replicated, mention that and indicate the results of the replicationDiscuss other literature reviews on your topicRefer the reader to other reviews on issues that you will not be discussing in detailsJustify comments such as, no studies were found.Avoid long lists of nonspecific referencesIf the results of previous studies are inconsistent or widely varying, cite them separatelyCite all relevant references in the review section of the thesis, dissertation, or journal articleDeveloping a coherent essay (Galvan, 2006: 91-96)If your review is long, provide an overview near the beginning of the reviewNear the beginning of a review, state explicitly what will and will not be coveredSpecify your point of view early in the review: this serves as the thesis statement of the review.Aim for a clear and cohesive essay that integrates the key details of the literature and communicates your point of view (literature is not a series of annotated articles).Use subheadings, especially in long reviewsUse transitions to help trace your argumentIf your topic teaches across disciplines, consider reviewing studies from each discipline separatelyWrite a conclusion for the end of the review: Provide closure so that the path of the argument ends with a conclusion of some kind.However, how you end the review will depend on your reason for writing it. Suppose the review was written to stand alone. In that case, as is the case of a term paper or a review article for publication, the conclusion needs to make clear how the material in the body of the review has supported the assertion or proposition presented in the introduction.On the other hand, a review of a thesis, dissertation, or journal article presenting original research usually leads to the research questions that will be addressed.RelatedSubscribe to get the latest posts sent to your email.Tagged literature review apa, literature review apa style, literature review background, literature review basics, literature review definition, literature review format, literature review outline, literature review sample, literature review structure, literature review template As a library, NLM provides access to scientific literature. Inclusion in an NLM database does not imply endorsement of, or agreement with, the contents by NLM or the National Institutes of Health. Learn more: PMC Disclaimer | PMC Copyright Notice . 2022 Fall;21(3):rm33. doi: 10.1187/cbe.21-05-0134To frame their work, biology education researchers need to consider the role of literature reviews, theoretical frameworks, and conceptual frameworks as critical elements of the research and writing process. However, these elements can be confusing for scholars new to education research. This Research Methods article is designed to provide an overview of each of these elements and delineate the purpose of each in the educational research process. We describe what biology education researchers should consider as they conduct literature reviews, identify theoretical frameworks, and construct conceptual frameworks. Clarifying these different components of educational research studies can be helpful to new biology education researchers and the biology education research community at large in situating their work in the broader scholarly literature.Discipline-based education research (DBER) involves the purposeful and situated study of teaching and learning in specific disciplinary areas (Singer etal., 2012). Studies in DBER are guided by research questions that reflect disciplines priorities and worldviews. Researchers can use quantitative data, qualitative data, or both to answer these research questions through a variety of methodological traditions. Across all methodologies, there are different methods associated with planning and conducting educational research studies that include the use of surveys, interviews, observations, artifacts, or instruments. Ensuring the coherence of these elements to the disciplines perspective also involves situating the work in the broader scholarly literature. The tools for doing this include literature reviews, theoretical frameworks, and conceptual frameworks. However, the purpose and function of each of these elements is often confusing to new education researchers. The goal of this article is to introduce new biology education researchers to these three important elements important in DBER scholarship and the broader educational literature.The first element we discuss is a review of research (literature reviews), which highlights the need for a specific research question, study problem, or topic of investigation. Literature reviews situate the relevance of the study within a topic and a field. The process may seem familiar to science researchers entering DBER fields, but new researchers may still struggle in conducting the review. Booth etal. (2016b) highlight some of the challenges novice education researchers face when conducting a review of literature. They point out that novice researchers struggle in deciding how to focus the review, determining the scope of articles needed in the review, and knowing how to be critical of the articles in the review. Overcoming these challenges (and others) can help novice researchers construct a sound literature review that can inform the design of the study and help ensure the work makes a contribution to the field.The second and third highlighted elements are theoretical and conceptual frameworks. These guide biology education research (BER) studies, and may be less familiar to science researchers. These elements are important in shaping the construction of new knowledge. Theoretical frameworks offer a way to explain and interpret the studied phenomenon, while conceptual frameworks clarify assumptions about the studied phenomenon. Despite the importance of these constructs in educational research, biology educational researchers have noted the limited use of theoretical or conceptual frameworks in published work (DeHaan, 2011; Dirks, 2011; Lo etal., 2019). In reviewing articles published in CBELife Sciences Education (LSE) between 2015 and 2019, we found that fewer than 25% of the research articles had a theoretical or conceptual framework (see the Supplemental Information), and at times there was an inconsistent use of theoretical and conceptual frameworks. Clearly, these frameworks are challenging for published biology education researchers, which suggests the importance of providing some initial guidance to new biology education researchers.Fortunately, educational researchers have increased their explicit use of these frameworks over time, and this is influencing educational research in science, technology, engineering, and mathematics (STEM) fields. For instance, a quick search for theoretical or conceptual frameworks in the abstracts of articles in Educational Research Complete (a common database for educational research) in STEM fields demonstrates a dramatic change over the last 20 years: from only 778 articles published between 2000 and 2010 to 5703 articles published between 2010 and 2020, a more than sevenfold increase. Greater recognition of the importance of these frameworks is contributing to DBER authors being more explicit about such frameworks in their studies.Collectively, literature reviews, theoretical frameworks, and conceptual frameworks work to guide methodological decisions and the elucidation of important findings. Each offers a different perspective on the problem of study and is an essential element in all forms of educational research. As new researchers seek to learn about these elements, they will find different resources, a variety of perspectives, and many suggestions about the construction and use of these elements. The wide range of available information can overwhelm the new researcher who just wants to learn the distinction between these elements or how to craft them adequately.Our goal in writing this paper is not to offer specific advice about how to write these sections in scholarly work. Instead, we wanted to introduce these elements to those who are new to BER and who are interested in better distinguishing one from the other. In this paper, we share the purpose of each element in BER scholarship, along with important points on its construction. We also provide references for additional resources that may be beneficial to better understanding each element. Table 1 summarizes the key distinctions among these elements.Comparison of literature reviews, theoretical frameworks, and conceptual reviewsLiterature reviewsTheoretical frameworksConceptual frameworksPurposeTo point out the need for the study in BER and connection to the field.To state the assumptions and orientations of the researcher regarding the topic of studyTo describe the researchers understanding of the main concepts under investigationAimsA literature review examines current and relevant research associated with the study question. It is comprehensive, critical, and purposeful.A theoretical framework illuminates the phenomenon of study and the corresponding assumptions adopted by the researcher. Frameworks can take on different orientations.The conceptual framework is created by the researcher(s), includes the presumed relationships among concepts, and addresses needed areas of study discovered in literature reviews.Connection to the manuscriptA literature review should connect to the study question, guide the study methodology, and be central in the discussion by indicating how the analyzed data advances what is known in the field.A theoretical framework drives the question, guides the types of methods for data collection and analysis, informs the discussion of the findings, and reveals the subjectivities of the researcher.The conceptual framework is informed by literature reviews, experiences, or experiments. It may include emergent ideas that are not yet grounded in the literature. It should be coherent with the papers theoretical framing.Additional pointsA literature review may reach beyond BER and include other education research fields.A theoretical framework does not rationalize the need for the study, and a theoretical framework can come from different fields.A conceptual framework articulates the phenomenon under study through written descriptions and/or visual representations.This article is written for the new biology education researcher who is just learning about these different elements or for scientists looking to become more involved in BER. It is a result of our own work as science education and biology education researchers, whether as graduate students and postdoctoral scholars or newly hired and established faculty members. This is the article we wish had been available as we started to learn about these elements or discussed them with new educational researchers in biology.A literature review is foundational to any research study in education or science. In education, a well-conceptualized and well-executed review provides a summary of the research that has already been done on a specific topic and identifies questions that remain to be answered, thus illustrating the current research projects potential contribution to the field and the reasoning behind the methodological approach selected for the study (Maxwell, 2012). BER is an evolving disciplinary area that is redefining areas of conceptual emphasis as well as orientations toward teaching and learning (e.g., Labov etal., 2010; American Association for the Advancement of Science, 2011; Nehm, 2019). As a result, building comprehensive, critical, purposeful, and concise literature reviews can be a challenge for new biology education researchers.There are different ways to approach and construct a literature review. Booth etal. (2016a) provide an overview that includes, for example, scoping reviews, which are focused only on notable studies and use a basic method of analysis, and integrative reviews, which are the result of exhaustive literature searches across different genres. Underlying each of these different review processes are attention to the search process, appraisal of articles, synthesis of the literature, and analysis: SALSA (Booth etal., 2016a). This useful acronym can help the researcher focus on the process while building a specific type of review.However, new educational researchers often have questions about literature reviews that are foundational to SALSA or other approaches. Common questions concern determining which literature pertains to the topic of study or the role of the literature review in the design of the study. This section addresses such questions broadly while providing general guidance for writing a narrative literature review that evaluates the most pertinent studies.The literature review process should begin before the research is conducted. As Boote and Beile (2005, p. 3) suggested, researchers should be scholars before researchers. They point out that having a good working knowledge of the proposed topic helps illuminate avenues of study. Some subject areas have a deep body of work to read and reflect upon, providing a strong foundation for developing the research question(s). For instance, the teaching and learning of evolution is an area of long-standing interest in the BER community, generating many studies (e.g., Perry etal., 2008; Barnes and Brownell, 2016) and reviews of research (e.g., Sickel and Friedrichsen, 2013; Ziadie and Andrews, 2018). Emerging areas of BER include the affective domain, issues of transfer, and metacognition (Singer etal., 2012). Many studies in these areas are transdisciplinary and not always specific to biology education (e.g., Rodrigo-Peiris etal., 2018; Kolpikova etal., 2019). These newer areas may require reading outside BER; fortunately, summaries of some of these topics can be found in the Current Insights section of the LSE website.In focusing on a specific problem within a broader research strand, a new researcher will likely need to examine research outside BER. Depending upon the area of study, the expanded reading list might involve a mix of BER, DBER, and educational research studies. Determining the scope of the reading is not always straightforward. A simple way to focus ones reading is to create a summary phrase or research nugget, which is a very brief descriptive statement about the study. It should focus on the essence of the study, for example, first-year nonmajor students understanding of evolution, metacognitive prompts to enhance learning during biochemistry, or instructors inquiry-based instructional practices after professional development programming. This type of phrase should help a new researcher identify two or more areas to review that pertain to the study. Focusing on recent research in the last 5 years is a good first step. Additional studies can be identified by reading relevant works referenced in those articles. It is also important to read seminal studies that are more than 5 years old. Reading a range of studies should give the researcher the necessary command of the subject in order to suggest a research question.Given that the research question(s) arise from the literature review, the review should also substantiate the selected methodological approach. The review and research question(s) guide the researcher in determining how to collect and analyze data. Often the methodological approach used in a study is selected to contribute knowledge that expands upon what has been published previously about the topic (see Institute of Education Sciences and National Science Foundation, 2013). An emerging topic of study may need an exploratory approach that allows for a description of the phenomenon and development of a potential theory. This could, but not necessarily, require a methodological approach that uses interviews, observations, surveys, or other instruments. An extensively studied topic may call for the additional understanding of specific factors or variables; this type of study would be well suited to a verification or a causal research design. These could entail a methodological approach that uses valid and reliable instruments, observations, or interviews to determine an effect in the studied event. In either of these examples, the researcher(s) may use a qualitative, quantitative, or mixed methods methodological approach.Even with a good research question, there is still more reading to be done. The complexity and focus of the research question dictates the depth and breadth of the literature to be examined. Questions that connect multiple topics can require broad literature reviews. For instance, a study that explores the impact of a biology faculty learning community on the inquiry instruction of faculty could have the following review areas:

literature reviews, it offers suggestions about making the case for your study.Galvan, J. L., & Galvan, M. C. (2017). Writing literature reviews: A guide for students of the social and behavioral sciences (7th ed.). Routledge. This book offers guidance on writing different types of literature reviews. For the novice researcher, there are useful suggestions for creating coherent literature reviews.As new education researchers may be less familiar with theoretical frameworks than with literature reviews, this discussion begins with an analogy. Envision a biologist, chemist, and physicist examining together the dramatic effect of a fog tsunami over the ocean. A biologist gazing at this phenomenon may be concerned with the effect of fog on various species. A chemist may be interested in the chemical composition of the fog as water vapor condenses around bits of salt. A physicist may be focused on the refraction of light to make fog appear to be sitting above the ocean. While observing the same objective event, the scientists are operating under different theoretical frameworks that provide a particular perspective or lens for the interpretation of the phenomenon. Each of these scientists brings specialized knowledge, experiences, and values to this phenomenon, and these influence the interpretation of the phenomenon. The scientists theoretical frameworks influence how they design and carry out their studies and interpret their data.Within an educational study, a theoretical framework helps to explain a phenomenon through a particular lens and challenges and extends existing knowledge within the limitations of that lens. Theoretical frameworks are explicitly stated by an educational researcher in the papers framework, theory, or relevant literature section. The framework shapes the types of questions asked, guides the method by which data are collected and analyzed, and informs the discussion of the results of the study. It also reveals the researchers subjectivities, for example, values, social experience, and viewpoint (Allen, 2017). It is essential that a novice researcher learn to explicitly state a theoretical framework, because all research questions are being asked from the researchers implicit or explicit assumptions of a phenomenon of interest (Schwandt, 2000).Theoretical frameworks are one of the most contemplated elements in our work in educational research. In this section, we share three important considerations for new scholars selecting a theoretical framework.The first step in identifying a theoretical framework involves reflecting on the phenomenon within the study and the assumptions aligned with the phenomenon. The phenomenon involves the studied event. There are many possibilities, for example, student learning, instructional approach, or group organization. A researcher holds assumptions about how the phenomenon will be effected, influenced, changed, or portrayed. It is ultimately the researchers assumption(s) about the phenomenon that aligns with a theoretical framework. An example can help illustrate how a researchers reflection on the phenomenon and acknowledgment of assumptions can result in the identification of a theoretical framework.In our example, a biology education researcher may be interested in exploring how students learning of difficult biological concepts can be supported by the interactions of group members. The phenomenon of interest is the interactions among the peers, and the researcher assumes that more knowledgeable students are important in supporting the learning of the group. As a result, the researcher may draw on Vygotskys (1978) sociocultural theory of learning and development that is focused on the phenomenon of student learning in a social setting. This theory posits the critical nature of interactions among students and between students and teachers in the process of building knowledge. A researcher drawing upon this framework holds the assumption that learning is a dynamic social process involving questions and explanations among students in the classroom and that more knowledgeable peers play an important part in the process of building conceptual knowledge.It is important to state at this point that there are many different theoretical frameworks. Some frameworks focus on learning and knowing, while other theoretical frameworks focus on equity, empowerment, or discourse. Some frameworks are well articulated, and others are still being refined. For a new researcher, it can be challenging to find a theoretical framework. Two of the best ways to look for theoretical frameworks is through published works that highlight different frameworks.When a theoretical framework is selected, it should clearly connect to all parts of the study. The framework should augment the study by adding a perspective that provides greater insights into the phenomenon. It should clearly align with the studies described in the literature review. For instance, a framework focused on learning would correspond to research that reported different learning outcomes for similar studies. The methods for data collection and analysis should also correspond to the framework. For instance, a study about instructional interventions could use a theoretical framework concerned with learning and could collect data about the effect of the intervention on what is learned. When the data are analyzed, the theoretical framework should provide added meaning to the findings, and the findings should align with the theoretical framework.A study by Jensen and Lawson (2011) provides an example of how a theoretical framework connects different parts of the study. They compared undergraduate biology students in heterogeneous and homogeneous groups over the course of a semester. Jensen and Lawson (2011) assumed that learning involved collaboration and more knowledgeable peers, which made Vygotskys (1978) theory a good fit for their study. They predicted that students in heterogeneous groups would experience greater improvement in their reasoning abilities and science achievements with much of the learning guided by the more knowledgeable peers.In the enactment of the study, they collected data about the instruction in traditional and inquiry-oriented classes, while the students worked in homogeneous or heterogeneous groups. To determine the effect of working in groups, the authors also measured students reasoning abilities and achievement. Each data-collection and analysis decision connected to understanding the influence of collaborative work.Their findings highlighted aspects of Vygotskys (1978) theory of learning. One finding, for instance, posited that inquiry instruction, as a whole, resulted in reasoning and achievement gains. This links to Vygotsky (1978), because inquiry instruction involves interactions among group members. A more nuanced finding was that group composition had a conditional effect. Heterogeneous groups performed better with more traditional and didactic instruction, regardless of the reasoning ability of the group members. Homogeneous groups worked better during interaction-rich activities for students with low reasoning ability. The authors attributed the variation to the different types of helping behaviors of students. High-performing students provided the answers, while students with low reasoning ability had to work collectively through the material. In terms of Vygotsky (1978), this finding provided new insights into the learning context in which productive interactions can occur for students.Another consideration in the selection and use of a theoretical framework pertains to its orientation to the study. This can result in the theoretical framework prioritizing individuals, institutions, and/or policies (Anfara and Mertz, 2014). Frameworks that connect to individuals, for instance, could contribute to understanding their actions, learning, or knowledge. Institutional frameworks, on the other hand, offer insights into how institutions, organizations, or groups can influence individuals or materials. Policy theories provide ways to understand how national or local policies can dictate an emphasis on outcomes or instructional design. These different types of frameworks highlight different aspects in an educational setting, which influences the design of the study and the collection of data. In addition, these different frameworks offer a way to make sense of the data. Aligning the data collection and analysis with the framework ensures that a study is coherent and can contribute to the field.New understandings emerge when different theoretical frameworks are used. For instance, Ebert-May etal. (2015) prioritized the individual level within conceptual change theory (see Posner etal., 1982). In this theory, an individuals knowledge changes when it no longer fits the phenomenon. Ebert-May etal. (2015) designed a professional development program challenging biology postdoctoral scholars existing conceptions of teaching. The authors reported that the biology postdoctoral scholars teaching practices became more student-centered as they were challenged to explain their instructional decision making. According to the theory, the biology postdoctoral scholars dissatisfaction in their descriptions of teaching and learning initiated change in their knowledge and instruction. These results reveal how conceptual change theory can explain the learning of participants and guide the design of professional development programming.The communities of practice (CoP) theoretical framework (Lave, 1988; Wenger, 1998) prioritizes the institutional level, suggesting that learning occurs when individuals learn from and contribute to the communities in which they reside. Grounded in the assumption of community learning, the literature on CoP suggests that, as individuals interact regularly with the other members of their group, they learn about the rules, roles, and goals of the community (Allee, 2000). A study conducted by Gehrke and Kezar (2017) used the CoP framework to understand organizational change by examining the involvement of individual faculty engaged in a cross-institutional CoP focused on changing the instructional practice of faculty at each institution. In the CoP, faculty members were involved in enhancing instructional materials within their department, which aligned with an overarching goal of instituting instruction that embraced active learning. Not surprisingly, Gehrke and Kezar (2017) revealed that faculty who perceived the community culture as important in their work cultivated institutional change. Furthermore, they found that institutional change was sustained when key leaders served as mentors and provided support for faculty, and as faculty themselves developed into leaders. This study reveals the complexity of individual roles in a COP in order to support institutional instructional change.It is important to explicitly state the theoretical framework used in a study, but elucidating a theoretical framework can be challenging for a new educational researcher. The literature review can help to identify an applicable theoretical framework. Focal areas of the review or central terms often connect to assumptions and assertions associated with the framework that pertain to the phenomenon of interest. Another way to identify a theoretical framework is self-reflection by the researcher on personal beliefs and understandings about the nature of knowledge the researcher brings to the study (Lysaght, 2011). In stating ones beliefs and understandings related to the study (e.g., students construct their knowledge, instructional materials support learning), an orientation becomes evident that will suggest a particular theoretical framework. Theoretical frameworks are not arbitrary, but purposefully selected.With experience, a researcher may find expanded roles for theoretical frameworks. Researchers may revise an existing framework that has limited explanatory power, or they may decide there is a need to develop a new theoretical framework. These frameworks can emerge from a current study or the need to explain a phenomenon in a new way. Researchers may also find that multiple theoretical frameworks are necessary to frame and explore a problem, as different frameworks can provide different insights into a problem.Finally, it is important to recognize that choosing x theoretical framework does not necessarily mean a researcher chooses y methodology and so on, nor is there a clear-cut, linear process in selecting a theoretical framework for ones study. In part, the nonlinear process of identifying a theoretical framework is what makes understanding and using theoretical frameworks challenging. For the novice scholar, contemplating and understanding theoretical frameworks is essential. Fortunately, there are articles and books that can help:Creswell, J. W. (2018). Research design: Qualitative, quantitative, and mixed methods approaches (5th ed.). Los Angeles, CA: Sage. This book provides an overview of theoretical frameworks in general educational research.Ding, L. (2019). Theoretical perspectives of quantitative physics education research. Physical Review Physics Education Research, 15(2), 020101-1020101-13. This paper illustrates how a DBER field can use theoretical frameworks.Nehm, R. (2019). Biology education research: Building integrative frameworks for teaching and learning about living systems. Disciplinary and Interdisciplinary Science Education Research, 1, ar15. . This paper articulates the need for studies in BER to explicitly state theoretical frameworks and provides examples of potential studies.Patton, M. Q. (2015). Qualitative research & evaluation methods: Integrating theory and practice. Sage. This book also provides an overview of theoretical frameworks, but for both research and evaluation.A conceptual framework is a description of the way a researcher understands the factors and/or variables that are involved in the study and their relationships to one another. The purpose of a conceptual framework is to articulate the concepts under study using relevant literature (Rocco and Plakhotnik, 2009) and to clarify the presumed relationships among those concepts (Rocco and Plakhotnik, 2009; Anfara and Mertz, 2014). Conceptual frameworks are different from theoretical frameworks in both their breadth and grounding in established findings. Whereas a theoretical framework articulates the lens through which a researcher views the work, the conceptual framework is often more mechanistic and malleable.Conceptual frameworks are broader, encompassing both established theories (i.e., theoretical frameworks) and the researchers own emergent ideas. Emergent ideas, for example, may be rooted in informal and/or unpublished observations from experience. These emergent ideas would not be considered a theory if they are not yet tested, supported by systematically collected evidence, and peer reviewed. However, they do still play an important role in the way researchers approach their studies. The conceptual framework allows authors to clearly describe their emergent ideas so that connections among ideas in the study and the significance of the study are apparent to readers.Including a conceptual framework in a research study is important, but researchers often opt to include either a conceptual or a theoretical framework. Either may be adequate, but both provide greater insight into the research approach. For instance, a research team plans to test a novel component of an existing theory. In their study, they describe the existing theoretical framework that informs their work and then present their own conceptual framework. Within this conceptual framework, specific topics portray emergent ideas that are related to the theory. Describing both frameworks allows readers to better understand the researchers assumptions, orientations, and understanding of concepts being investigated. For example, Connolly etal. (2018) included a conceptual framework that described how they applied a theoretical framework of social cognitive career theory (SCCT) to their study on teaching programs for doctoral students. In their conceptual framework, the authors described SCCT, explained how it applied to the investigation, and drew upon results from previous studies to justify the proposed connections between the theory and their emergent ideas.In some cases, authors may be able to sufficiently describe their conceptualization of the phenomenon under study in an introduction alone, without a separate conceptual framework section. However, incomplete descriptions of how the researchers conceptualize the components of the study may limit the significance of the study by making the research less intelligible to readers. This is especially problematic when studying topics in which researchers use the same terms for different constructs or different terms for similar and overlapping constructs (e.g., inquiry, teacher beliefs, pedagogical content knowledge, or active learning). Authors must describe their conceptualization of a construct if the research is to be understandable and useful.There are some key areas to consider regarding the inclusion of a conceptual framework in a study. To begin with, it is important to recognize that conceptual frameworks are constructed by the researchers conducting the study (Rocco and Plakhotnik, 2009; Maxwell, 2012). This is different from theoretical frameworks that are often taken from established literature. Researchers should bring together ideas from the literature, but they may be influenced by their own experiences as a student and/or instructor, the shared experiences of others, or thought experiments as they construct a description, model, or representation of their understanding of the phenomenon under study. This is an exercise in intellectual organization and clarity that often considers what is learned, known, and experienced. The conceptual framework makes these constructs explicitly visible to readers, who may have different understandings of the phenomenon based on their prior knowledge and experience. There is no single method to go about this intellectual work.Reeves etal. (2016) is an example of an article that proposed a conceptual framework about graduate teaching assistant professional development evaluation and research. The authors used existing literature to create a novel framework that filled a gap in current research and practice related to the training of graduate teaching assistants. This conceptual framework can guide the systematic collection of data by other researchers because the framework describes the relationships among various factors that influence teaching and learning. The Reeves etal. (2016) conceptual framework may be modified as additional data are collected and analyzed by other researchers. This is not uncommon, as conceptual frameworks can serve as catalysts for concerted research efforts that systematically explore a phenomenon (e.g., Reynolds etal., 2012; Brownell and Kloser, 2015).Sabel etal. (2017) used a conceptual framework in their exploration of how scaffolds, an external factor, interact with internal factors to support student learning. Their conceptual framework integrated principles from two theoretical frameworks, self-regulated learning and metacognition, to illustrate how the research team conceptualized students use of scaffolds in their learning (Figure 1). Sabel etal. (2017) created this model using their interpretations of these two frameworks in the context of their teaching. Conceptual framework from Sabel etal. (2017).A conceptual framework should describe the relationship among components of the investigation (Anfara and Mertz, 2014). These relationships should guide the researchers methods of approaching the study (Miles etal., 2014) and inform both the data to be collected and how those data should be analyzed. Explicitly describing the connections among the ideas allows the researcher to justify the importance of the study and the rigor of the research design. Just as importantly, these frameworks help readers understand why certain components of a system were not explored in the study. This is a challenge in education research, which is rooted in complex environments with many variables that are difficult to control.For example, Sabel etal. (2017) stated: Scaffolds, such as enhanced answer keys and reflection questions, can help students and instructors bridge the external and internal factors and support learning (p. 3). They connected the scaffolds in the study to the three dimensions of metacognition and the eventual transformation of existing ideas into new or revised ideas. Their framework provides a rationale for focusing on how students use two different scaffolds, and not on other factors that may influence a students success (self-efficacy, use of active learning, exam format, etc.).In constructing conceptual frameworks, researchers should address needed areas of study and/or contradictions discovered in literature reviews. By attending to these areas, researchers can strengthen their arguments for the importance of a study. For instance, conceptual frameworks can address how the current study will fill gaps in the research, resolve contradictions in existing literature, or suggest a new area of study. While a literature review describes what is known and not known about the phenomenon, the conceptual framework leverages these gaps in describing the current study (Maxwell, 2012). In the example of Sabel etal. (2017), the authors indicated there was a gap in the literature regarding how scaffolds engage students in metacognition to promote learning in large classes. Their study helps fill that gap by describing how scaffolds can support students in the three dimensions of metacognition: intelligibility, plausibility, and wide applicability. In another example, Lane (2016) integrated research from science identity, the ethic of care, the sense of belonging, and an expertise model of student success to form a conceptual framework that addressed the critiques of other frameworks. In a more recent example, Sbeglia etal. (2021) illustrated how a conceptual framework influences the methodological choices and inferences in studies by educational researchers.Sometimes researchers draw upon the conceptual frameworks of other researchers. When a researchers conceptual framework closely aligns with an existing framework, the discussion may be brief. For example, Ghee etal. (2016) referred to portions of SCCT as their conceptual framework to explain the significance of their work on students self-efficacy and career interests. Because the authors conceptualization of this phenomenon aligned with a previously described framework, they briefly mentioned the conceptual framework and provided additional citations that provided more detail for the readers.Within both the BER and the broader DBER communities, conceptual frameworks have been used to describe different constructs. For example, some researchers have used the term conceptual framework to describe students conceptual understandings of a biological phenomenon. This is distinct from a researchers conceptual framework of the educational phenomenon under investigation, which may also need to be explicitly described in the article. Other studies have presented a research logic model or flowchart of the research design as a conceptual framework. These constructions can be quite valuable in helping readers understand the data-collection and analysis process. However, a model depicting the study design does not serve the same role as a conceptual framework. Researchers need to avoid conflating these constructs by differentiating the researchers conceptual framework that guides the study from the research design, when applicable.Explicitly describing conceptual frameworks is essential in depicting the focus of the study. We have found that being explicit in a conceptual framework means using accepted terminology, referencing prior work, and clearly noting connections between terms. This description can also highlight gaps in the literature or suggest potential contributions to the field of study. A well-elucidated conceptual framework can suggest additional studies that may be warranted. This can also spur other researchers to consider how they would approach the examination of a phenomenon and could result in a revised conceptual framework.It can be challenging to create conceptual frameworks, but they are important. Below are two resources that could be helpful in constructing and presenting conceptual frameworks in educational research:Maxwell, J. A. (2012). Qualitative research design: An interactive approach (3rd ed.). Los Angeles, CA: Sage. Chapter 3 in this book describes how to construct conceptual frameworks.Ravitch, S. M., & Riggan, M. (2016). Reason & rigor: How conceptual frameworks guide research. Los Angeles, CA: Sage. This book explains how conceptual frameworks guide the research questions, data collection, data analyses, and interpretation of results.Literature reviews, theoretical frameworks, and conceptual frameworks are all important in DBER and BER. Robust literature reviews reinforce the importance of a study. Theoretical frameworks connect the study to the base of knowledge in educational theory and specify the researchers assumptions. Conceptual frameworks allow researchers to explicitly describe their conceptualization of the relationships among the components of the phenomenon under study. Table 1 provides a general overview of these components in order to assist biology education researchers in thinking about these elements.It is important to emphasize that these different elements are intertwined. When these elements are aligned and complement one another, the study is coherent, and the study findings contribute to knowledge in the field. When literature reviews, theoretical frameworks, and conceptual frameworks are disconnected from one another, the study suffers. The point of the study is lost, suggested findings are unsupported, or important conclusions are invisible to the researcher. In addition, this misalignment may be costly in terms of time and money.Conducting a literature review, selecting a theoretical framework, and building a conceptual framework are some of the most difficult elements of a research study. It takes time to understand the relevant research, identify a theoretical framework that provides important insights into the study, and formulate a conceptual framework that organizes the finding. In the research process, there is often a constant back and forth among these elements as the study evolves. 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