

From Concept to Website: Designing an Instructional Module for Documentary Film Research

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This article focuses on the design and development of an educational resource to guide beginner filmmakers with documentary film subject research and data collection. It also examines the instructional design process that was used to iteratively bring the educational resource to its final, completed form. This research used data collected from a previous study (Iwasaki, 2021b) that captured and summarized the knowledge and expertise of 11 professional filmmakers with subject research and data collection for documentary film. After analysis and interpretation, five major themes emerged which were organized as beneficial suggestions. Motivational, instructional, and multimedia learning models served as the frameworks to inform and design the resource. Experienced reviewers conducted multiple formative assessments; what started out as a basic resource evolved into a content rich, technology-enhanced, interactive instructional "module" website. It will contribute to the literature of documentary film research, the fields of instructional design and education, and the humanities.

Keywords: ADDIE design model, ARCS motivational concepts, Documentary film instructional module, Documentary filmmaking, Film studies, Instructional design and content development

Introduction

Documentary film is a powerful and influential information and communication medium that is widely recognized and utilized successfully in many contexts, including education (Aufderheide, 2007; Bell, 2011; Frank 2013; Winston, Vanstone & Chi, 2017). Its increasing use in education timely coincides with current technological advances in film and video production. What has historically been a very expensive and prohibitive undertaking is now a progressively egalitarian vocation; documentary filmmaking can now be accomplished with inexpensive equipment, software applications and smartphones (Loustaunau & Shaw, 2018; Winston et al., 2017).

Information about the overall documentary filmmaking process is available; however, literature on *how* to conduct subject research and collect data for documentary film, which is an essential step in the production process, is limited in both scholarly and popular sources (Adorama Learning Center, 2018; Desktop Documentaries, 2018). This is a problem for beginners and students exploring documentary film production who might not know how to begin subject research and data collection for documentary film. The design and development of an educational resource for documentary film subject research and data collection is one way to address this lack of resources. An informational and educational resource on how to conduct subject research and data collection for documentary film, generated from the knowledge and experiences of professional filmmakers, would be extremely helpful to student filmmakers. Receiving this valuable information would enable beginner filmmakers to share their important stories with the world more quickly and with improved creativity and production. This professional guidance would benefit beginner filmmakers as well as society at large and audiences (Leavy, 2015; Loustaunau, 2018). Increased availability of timely documentaries would give audiences expanded learning opportunities.

The overarching goal and output of the study was an educational resource about research and data collection for documentary film, with stand-alone attributes; however, the researcher didn't know what final form the resource would take. Therefore, this study applied the iterative instructional ADDIE design process (Dick, Carey, & Carey, 2001; McGriff, 2000; Molenda, Pershing, & Reigeluth, 1996; Serhat, 2017), best educational practices, and multiple formative assessments conducted by qualified, experienced reviewers. Their constructive feedback informed and guided the strategic design modifications for the next iteration. Navigating through the instructional design process significantly helped the educational resource evolve to take its final form and shape. What started out as a basic, single page infographic became an engaging, content rich, easy-to-navigate, technology-enhanced, multimedia instructional "module," multiple page website.

In summary, this study focused on two points: 1) the design and development of an educational resource to guide and assist beginner and student filmmakers exploring documentary film production with documentary film subject research and data collection, and 2) the systematic instructional design process that was used to iteratively bring the educational resource to its final, completed presentation form as an instructional module. This module adds a much-needed, relevant and valuable educational resource to the limited body of knowledge about the topic. Such a resource would help student filmmakers share their stories with the world using the expanding and effective medium of documentary film (Loustaunau & Shaw, 2018). This original instructional module is intended to contribute to the literature of documentary film research studies, the fields of instructional multimedia design and education, and the humanities. This study successfully merged learning sciences theory and instructional design with humanities and arts research. It has potential to significantly influence and impact the broad possibilities of innovative, interdisciplinary research design and collaboration.

Literature Review

Documentary Film Production Process

Traditional documentary film often takes a highly subjective approach with the filmmaker directing the entire process, from subject selection, research, and data collection, to creative approaches (Bell, 2011; Friend & Caruthers, 2016). Although creating a documentary can be extremely satisfying and fruitful, filmmakers also acknowledge that it can also be very challenging. It is often a complex process with a number of steps and actions including budgeting, planning, script writing, production, editing and distribution. Since information or instruction on the process are limited or undocumented, many filmmakers learn by intuitively doing the necessary work to completion (Adorama Learning Center, 2018; Desktop Documentaries, 2018).

The first step toward creating a documentary film is to find a subject that is important to the filmmaker and has an interested audience. Since the road to creating a documentary is often formidable and long, the topic needs to both engage and sustain the filmmaker who additionally feels compelled to share the story through the medium of film (Adorama Learning Center, 2018; Desktop Documentaries, 2018).

The second step is “research and data collection,” an essential task to find resources and conduct interviews that include background, history and context of the subject, as well as the interesting, credible, emotional and inspiring material featuring the critical points that will connect and resonate with the audience. This step is crucial because it determines the content of the film (Aufderheide, 2007; Bell, 2011; Frank 2013; Winston et al., 2017).

Documentary Film and Education

In regards to instructional opportunities, increased internet access and digital technologies (Nash, Hight, & Summerhayes, 2014) have helped make documentary film a powerful and effective information and communication medium that is widely recognized and utilized successfully in educational best practices today to multiple audiences, from elementary to post-secondary, and beyond (Friend & Caruthers, 2016; Hanley, Noblit, Sheppard, & Barone, 2013; Leavy, 2015; Winston, et al., 2017).

Social science research, (Frank, 2013; Goldman, Pea, Barron, & Derry, 2007) including anthropology, often embraces the documentary film genre using terms such as ethnographic film and ethnocinema (Harris, 2012; Leavy, 2015; Sjöberg, 2008). Frank (2013) expanded the educational practice and application of the genre and Bell (2011) focused on its importance in providing material for historiographical research and scholarship. Whiteman (2004) discussed documentary films’ political impact upon learners, and Fonda (2014) combined art therapy and filmmaking. Documentary film is now used in a variety of research and teaching contexts and presentations using a wide range of styles and approaches. They can range from loosely planned projects to fully scripted and rehearsed professional productions with a cinematographer, crew and staff, as well as a cast and actors for reenactments. Some may also feature the researcher(s), participants, and other sources (Leavy, 2015; Leavy & Chilton, 2014).

Documentary film has proven to be a popular resource for researchers and educators hoping to inspire, educate and promote knowledge and awareness of diverse, global issues such as social justice and climate change (Aufderheide, 2007; Frank, 2013; Hanley, et al., 2013; Rashid, 2014); migration and immigration from Central and South America (Loustaunau & Shaw, 2018); to the environmental and health concerns of agricultural chemicals (The Monsanto Papers, 2018).

The Current Study

The purpose of this study was to address the lack of information and educational resources about subject research and data collection for documentary film, an essential step in the process of documentary filmmaking. An academic search resulted in a list of scholarship about the extensive field of documentary research and analysis studies, and popular sources addressed it briefly; however, there is a deficit about *how to* conduct the basics of subject research and data collection for a documentary film (Adorama Learning Center, 2018; Desktop Documentaries, 2018). This study sought to resolve this gap by designing and developing an educational resource on how to begin this process.

The researcher believed the best way to accomplish this was to capture the wisdom and experience of professional filmmakers with subject research and data collection (Iwasaki, 2021b) and then develop that information into a relevant, helpful, easy-to-use educational resource for beginner filmmakers exploring documentary film production. The findings from the previous study (Iwasaki, 2021b) resulted in five major themes organized as beneficial suggestions about documentary film subject research and data collection. The results were used to explore and answer the following research question for this study:

1. How can filmmakers' experiences be developed into an educational resource for documentary film subject research and data collection for student filmmakers learning about and exploring documentary film production?

Methodology

To answer this research question the researcher used the ADDIE model of instructional design (Dick et al., 2001; McGriff, 2000; Molenda, 2015; Molenda et al., 2017) to organize and guide the study's overall design process: analysis, design, development, implementation and evaluation.

Analysis

Problem Identification. A lack of information and educational resources about subject research and data collection for documentary film in either scholarly or popular sources (Adorama Learning Center, 2018; Desktop Documentaries, 2018) is a problem as many students exploring documentary film production might need assistance on how to begin subject research and data collection in the documentary film creation process. As documentary filmmaking becomes an increasingly accessible endeavor because of technology (Loustanaunau & Shaw, 2018; Winston et al, 2017), and its use in dissemination of information and education is increasing (Aufderheide, 2007; Bell, 2011; Frank, 2013), there is a corresponding need for educational resources about this essential step.

Needs Assessment. Since the target audience of the educational resource is student filmmakers in higher education, addressing their academic, cognitive, and physical needs were essential to its design. The general college student profile in the United States includes: diverse population at 42% non-white, 62% work part- or full-time, demand for digital technology, self-paced learning, multimedia integration, online learning's flexibility and convenience, need for financial aid and affordable housing, and focus on the cognitive knowledge, exploration, discovery and meaning needs (Bill & Melinda Gates Foundation, 2020; Education Dive, 2017; McGraw-Hill, 2016; National Center for Education Statistics, 2020). This study was also informed by students at a four-year comprehensive, regional university in the western United States who participated in this study. The learner profile includes a diverse, mostly full-time undergraduate and graduate student population.

Task Analysis. The output of this study is an educational resource for documentary film subject research and data collection to guide and assist beginner filmmakers exploring documentary film production. The information in this resource is derived from the data collected in another study (Iwasaki, 2021b) that summarized the knowledge and experiences of 11 professional filmmakers with subject research and data collection for documentary film. The educational resource determined to be needed for this study was designed and developed by the researcher.

Design

ARCS Model of Motivational Design. To increase the likelihood that the educational resource will resonate with the target audience, beginner and student filmmakers, a well-established model in motivation and instructional design, Keller's ARCS model (1983, 2010, 2017), served as the framework that informed and guided the design and

development of the resource. The ARCS motivational factors of attention, relevance, confidence and satisfaction (Gagne, Wager, Golas, & Keller, 2005; Pappas, 2015; Peterson 2003) are strongly applicable to the field of documentary film with similar motivational goals for documentary filmmakers, whether they are veterans or beginners (educators/instructional designers), and their audience (learners/students) (Hodges & Kim, 2013; Keller & Suzuki, 2004; West, Hoffman, & Costello, 2017). While the goals for documentary filmmakers may not be referred to as “instructional design,” their educational goals are very similar; they use relevant, motivational methods of film and video production (Frank, 2013; Nash et al., 2014; Winston et al., 2017). As a problem-solving instructional design framework (Gagne, et al., 2005; Keller & Suzuki, 2014; Kim & Keller, 2008; Peterson, 2003), the ARCS model provided a blueprint for the development of the educational resource.

Table 1 below presents the content that was used for the educational resource in this study that was derived from the results of a previous study (Iwasaki, 2021b). After analysis and interpretation, five major themes emerged which were aligned with the ARCS model (Astleitner & Lintner, 2004; Keller, 1983, 2010, 2017) and organized as beneficial suggestions intended to guide and assist student filmmakers. The information summarized the real-world wisdom and experiences of 11 professional filmmakers with research and data collection for documentary film.

Table 1

Five Major Recommendations/ Categories for Documentary Film Subject Research and Data Collection and their Relationship to the ARCS Model Concepts

<p>Tell the Story Visually (Attention)</p> <ul style="list-style-type: none"> ● Collect interesting interviews, historical documents, material, photos, videos and supplemental footage. ● Answer why this story needs to be presented visually. ● Determine if the sources and materials are accessible. ● Establish an organized system for all of the data. ● “Show” the audience, not just tell the audience.
<p>Find Strong “Characters” (Attention)</p> <ul style="list-style-type: none"> ● Focus on the strength of your interview sources. ● Feature genuine interview characters who are engaging, fascinating, vulnerable, revealing, and who feel true. ● Create an emotional and impactful audience connection. ● Generate affinity and empathy with the audience. ● Guide the audience on a storytelling journey.
<p>Support Universal Themes (Relevance)</p> <ul style="list-style-type: none"> ● Focus on all-embracing topics such as love, joy, peace, family, survival, pain, suffering, equity, or the striving and struggling one takes to reach a goal. ● Unravel the universal human stories and relationships. ● Shed light on the shared and collective human experience. ● Select topics that entertain and move audiences.
<p>Do the Research (Confidence)</p> <ul style="list-style-type: none"> ● Complete an exhaustive resource search. ● Collect existing material about your subject. ● Identify key characters who can tell the story. ● Determine experts who can add legitimacy. ● Pinpoint a gap in the story, or a lack of the story. ● Fill that void with your documentary film
<p>Relate to your audience (Relevance and Satisfaction)</p> <ul style="list-style-type: none"> ● Create a meaningful, relevant story that resonates, informs, educates, inspires and empowers audiences to action. ● Help the audience apply the story to the real world, current issues, and to their own lives and circumstances. ● Encourage viewers to insert their own stories, experiences and struggles into what they’re seeing.

Mayer's 12 Principles of Multimedia Learning. In order to apply best practices in the design and development of the educational resource to meet the needs of the target audience, Richard Mayer's (2001, 2009, 2017; Clark & Mayer, 2011) well-known and widely used cognitive theory of multimedia learning was utilized. Mayer focused on 12 principles and theorized that people can learn more completely and deeply from words and pictures than from words alone. Mayer (2001, 2009, 2017; Clark & Mayer, 2011) defined multimedia learning as learning from words such as spoken or printed text, and pictures such as illustrations, photos, maps, graphs, animation, or video.

Development

In this study's phase of ADDIE (Dick et al., 2001; Molenda et al., 1996), the researcher used the ARCS concepts (Keller, 1983, 2010, 2017) and the 12 Principles of Multimedia Learning (Mayer, 2001, 2009, 2017; Clark & Mayer, 2011) to design and develop the educational resource and the necessary material that would be used for it. The iterative design process of the resource included multiple formative assessment reviews. Each review informed and guided the critical design decisions for the next iteration. There were three prototypes and each one was reviewed by one or more of the following: a professional graphic designer, experienced researcher/educators, and a student filmmaker. In the first prototype, the educational resource began as a basic infographic. During the third prototype iteration, the "educational resource" was appropriately renamed as an "instructional module" because the resource had evolved to become a technology-enhanced, interactive, multimedia website. This article will use the terms as they apply chronologically in the iterative design process.

First Prototype. The first prototype started out as a single page infographic that was made using a graphic design platform with content from a previous study (Iwasaki, 2021b) that summarized the knowledge and experiences of 11 professional filmmakers with subject research and data collection for documentary film acquired from the actual filmmaking process. Table 1 on the previous page features the five major themes that emerged from analysis and interpretation of that study and their alignment with the ARCS model concepts (Astleitner & Lintner, 2004; Keller, 1983, 2010, 2017). The themes were organized as beneficial suggestions intended to guide beginner and student filmmakers exploring documentary film production.

Since this study's goal was to create an educational resource to help student filmmakers, and the information was being presented as constructive recommendations, the five themes were renamed as "tips" as in "five tips for filmmaking." The shortened text used for this first prototype already included some of the elements of Mayer's 12 principles of multimedia learning (2001, 2009, 2017; Clark & Mayer, 2011) such as extraneous words are excluded, characteristics of the main concepts are featured, corresponding words and pictures are presented simultaneously and near each other, and text is presented in a conversational style.

The researcher had originally planned to implement the educational resource at a face-to-face presentation with students taking a free, 11-week non-credit class on film and video production at a university located in the western United States (Iwasaki, 2021a). The researcher had planned to present and explain the educational resource, an infographic, in person to the class as a lesson, asking students to complete hard copy evaluations (pretest and posttest). The researcher planned to move through the infographic and listen to the audio clips being played together as a class. Printed copies of the infographic would also be passed out.

However, due to the COVID-19 pandemic, the university moved entirely to online learning in March 2020 and face-to-face classes were cancelled. Thus, the researcher was motivated to consider online possibilities of implementing the educational resource and the evaluation instruments with the target audience (Iwasaki, 2021a). While the inability to meet face-to-face was unexpected, the situation featured positive aspects. Previous findings by Mayer and other researchers report that multimedia online delivery can actually increase learning potential and outcomes (Alessi & Trollip, 2001; Chiu & Churchill, 2016; Clark & Mayer, 2011; Levonen & Rouet, 2001; Mayer, 2001, 2009, 2017). Self-paced learning, multimedia, technology integration, and online learning were important academic needs for the target audience as discussed in the Analysis section; thus, the move to online implementation was a positive, constructive development (McGraw-Hill, 2016; National Center for Education Statistics, 2020).

The online delivery enabled greater multimedia possibilities. More of Mayer's multimedia principles were added to this first prototype, most notably an audio component embedded into the infographic; thus, following Mayer's principle of combining graphics, narration and text. Participants could click on a link to listen to a short audio clip of a filmmaker discussing that tip, adding valuable insight, experience and context. These audio clips were part of the 11 interviews conducted in the previously noted study (Iwasaki, 2021b). There were five audio clips for each of the five filmmaking tips and due to IRB protocol and privacy, there were no images of the filmmakers. This addressed two of

Mayer's principles: narration in multimedia lessons is spoken in a friendly human voice rather than a machine voice, and the speaker's image is not necessary to add to the screen. Instead of following the ARCS acronym as per Table 1, the information was rearranged in a manner that made organizational and logical sense to the target audience.

Moving to an online delivery platform would also allow participants to complete the educational resource at their own pace, enabling increased learning. This was a helpful move for the target audience because self-paced learning and online delivery were academic needs (Education Dive, 2017; McGraw Hill, 2020). Figure 1 below is an image of the first prototype of the resource.



Figure 1. First prototype of the module.

First Formative Assessment. A professional graphic designer in the graphic arts industry reviewed this first prototype. His overall comment was, "It is really about the content. The visual treatment of the type, and color should be in service of the points you want to get across and the readers' ability to consume and understand your message," (Yugawa, personal communication, 2020). He provided constructive feedback on design and style to improve the first iteration.

Second Prototype. The researcher applied the professional graphic designer's feedback to inform and guide the design decisions of the second iteration (see Figure 2 below). Examples of the modifications include: the film reel

image was removed; italics from the title was removed; the orange “tip” headings background was removed; the color scheme was changed to compliment the images; and the stock cartoon images from the design platform were removed and replaced with real photography with a similar style. In addition to the woman of color in “Tip 2. Tell the story visually,” with 11.2 million females attending college compared to 8.7 males (Beyond Campus Innovations, 2019), it seemed a reasonable choice to add another female for “Tip 1. Do the Research.”

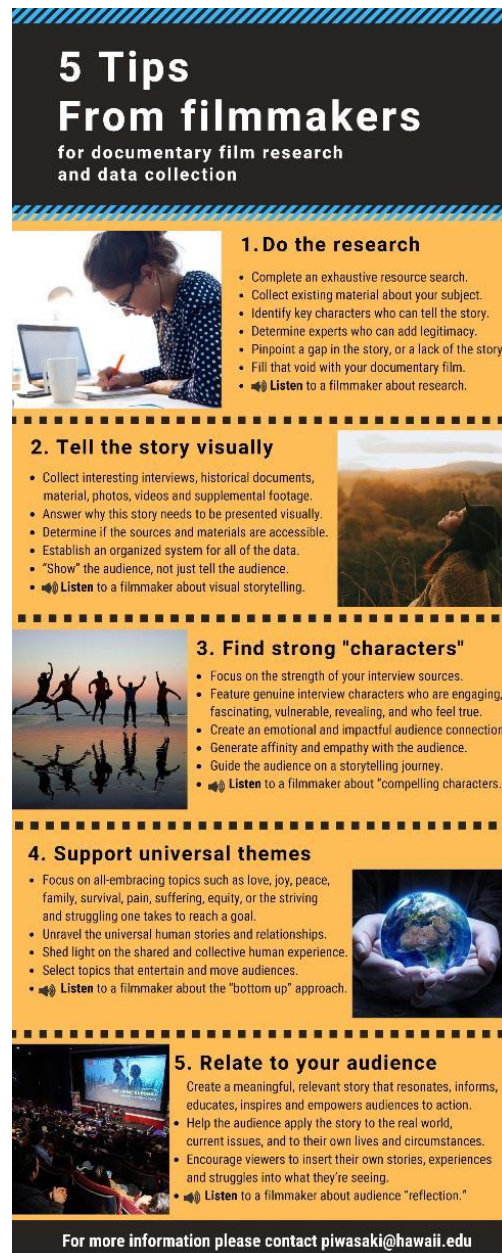


Figure 2. Second prototype of the module.

Second Formative Assessment. In order to ensure the information in the resource was being presented using educational best practices, the researcher conducted a review of the second prototype with two experienced, qualified researcher/educators familiar with the topic and a student filmmaker. The overall feedback from the reviewers was positive and they felt the information would be very useful and helpful to beginner filmmakers about research and data collection for documentary film. The student filmmaker thought the information was especially valuable and relevant for him; he also wished he had this helpful information earlier in his filmmaking journey.

However, they felt that while the infographic was satisfactory, it wasn't engaging, rich or interactive enough for student filmmakers from a learning design approach, especially if this was to be presented online. The audio clips were a good addition, but they felt it would be helpful to be able to listen to the audio while viewing and studying the infographic so that participants would be able to experience the visual, text and audio together. In this second prototype, clicking on the audio clip icon opened another window. Both researcher/educators suggested that perhaps a single webpage or multiple page website would improve the educational experience for students.

Third Prototype. With technical assistance from one of the reviewers, the researcher was able to use all of the text and graphics from the second prototype to create a multiple page website using HTML style sheets via the researcher's university personal homepages site. Expanding beyond a single page infographic, the educational "resource" could indeed now be called a multimedia instructional "module." From this point, the educational resource will be called an instructional module.

The website was a significant improvement from the second prototype because the website enabled advancement of pages. Each of the five filmmaking tips could be presented on separate web pages to reinforce learning, applying two other principles of Mayer's multimedia learning: 1) a multimedia lesson is presented in well-organized, user-paced segments rather than as a continuous unit, and 2) characteristics of the main concepts (the five tips for filmmaking), strengthened the presentation. All of Mayer's 12 principles for multimedia learning were successfully applied to this iteration (2001, 2009, 2017; Clark & Mayer, 2011).

Third Formative Assessment. The two experienced, qualified researcher/educators who reviewed the second prototype, and an additional researcher/educator, evaluated the third prototype. They acknowledged and appreciated the streamlined, polished third prototype, noting the ease of use of the module. Participants could remain on the page, view the visuals, and read the text while listening to the audio clips. There were two parts to their constructive feedback. The first part focused on mechanical and other usability concerns such as including a "begin" button, "back" and "next" buttons on each page; enlarging the photos; increasing the font size of the text; and centering the material.

The second part of their feedback focused on important design strategies to guide the next iteration. For example, include: a welcome page that briefly describes the research; an overview page describing all the steps required in the module; create clear and simple instructions; the ability to take the evaluation surveys on the website; and add audio clip progress bars that would allow participants to see the length of each of the five clips and how far along they are in the process of listening to the clip. Although all the clips are quite short, ranging from 34 seconds to 2:05 minutes, the reviewers felt it would be helpful to participants moving through the module.

Fourth prototype. With technical assistance once again from one of the reviewers, the researcher was able to apply the recommended design modifications and strategies to the fourth prototype. This included applying Mayer's principle of "Words from a multimedia lesson are presented in a conversational style rather than formal style" to the module's instructions by using language contractions. For example, instead of writing "Here is an overview of what you need to do as a project participant," the researcher used the contraction "Here's."

This fourth prototype became the final iteration of the instructional module on subject research and data collection for documentary film. What began as a basic, single page infographic became an engaging, content rich, easy-to-navigate, technology-enhanced, interactive, multimedia instructional module presented as a website. With multiple reviews and assessments, the design process successfully produced a quality module for the target audience, beginner and student filmmakers. The module addressed their academic, cognitive and physical needs including the increased demand for digital technology. Students feel that digital technology helps improve focus, grades, efficiency, effectiveness, and career readiness (Education Dive, 2017; McGraw Hill, 2020).

Here is the link to the instructional module "Five Tips from Filmmakers" website:

http://www2.hawaii.edu/~piwasaki/Five_Tips/

Figure 3 below is a screenshot from the website in its fourth and final iteration featuring "Tip 2. Tell the story Visually."



Figure 3. Screenshot of “Tip 2. Tell the Story Visually” webpage from the module website.

Implementation and Evaluation

The ADDIE model’s implementation and evaluation phases with the target audience, the student filmmakers, were conducted in another study (Iwasaki, 2021a).

Discussion and Conclusion

The purpose of this study was to address the problem of inadequate information and educational resources for step two in the documentary filmmaking process: subject research and data collection. This study addressed this gap by designing and developing an instructional module about documentary film research and data collection for students learning about and exploring documentary film production. Therefore, this study focused on two points: 1) the design and development of an instructional module to guide and assist beginner filmmakers with documentary film research and data collection, and 2) the instructional design process that was used to iteratively bring the instructional module to its final, completed form. During the third prototype iteration, the “instructional resource” was renamed as an “instructional module” because the resource had evolved to become a technology-enhanced, multiple page website. The final product resulted in an engaging, content rich, easy-to-navigate, interactive multimedia instructional module. Applying best practices in instructional design, this module, generated from the knowledge and experiences of professional filmmakers, would be extremely helpful for beginner filmmakers who would have the advantage of the wisdom and guidance from veteran filmmakers that may give them a head start in the filmmaking process. Such a module may help them share their important stories with the world using the increasing and effective medium of documentary film (Loustounau & Shaw, 2018). Society and audiences would also benefit from expanded learning opportunities with an increased availability of timely documentaries from filmmakers (Leavy, 2015; Loustounau &

Shaw, 2018). The instructional module is valuable and important because it adds a much-needed, relevant, useful, and original educational resource to the limited body of knowledge on the topic.

This research also provided a valuable learning experience regarding the iterative instructional design process of producing an instructional module on how to conduct documentary film research and data collection. The creation of the module was the output goal for the study; however, the successful design process was equally important. The researcher was able to successfully apply framework and theory to the design and development of an instructional module to address the academic, cognitive and physical needs of the target audience. The researcher utilized Keller's ARCS motivational model (1983, 2010, 2017) and Mayer's 12 principles for multimedia learning (2001, 2009, 2017; Clark & Mayer, 2011) to inform and design the instructional module, and the ADDIE instructional design model (Dick et al., 2001; McGriff, 2000; Molenda et al., 1996; Serhat, 2017) guided the study's overarching design process.

The researcher had originally planned to present and explain the instructional module in person to students taking a class on film and video production at a university located in the western United States. However, due to the COVID-19 pandemic, the university moved entirely to online learning in March 2020 and face-to-face gatherings were cancelled. Thus, the researcher turned to online platforms of administering the instructional module and evaluations surveys (Iwasaki, 2021a).

The instructional design process included multiple prototypes, formative assessments and reviews, and each assessment informed and guided the design decisions for the next iteration. The reviews that were conducted by qualified and experienced reviewers were instrumental to designing a quality instructional module. Navigating through the evolving design process significantly helped the researcher improve the module into a quality product in its final form. What started out as a single page infographic eventually became an interactive, multimedia, technology-enhanced instructional module that meets the academic, cognitive and physical needs of the target audience, the student filmmakers. The implementation, evaluation, impact and educational value of the instructional module upon the target audience, were conducted in another study (Iwasaki, 2021a).

This study achieved its goal with a substantial output, an online instructional module for documentary film subject research and data collection that will guide and assist beginner and student filmmakers exploring documentary film production. This result makes a major contribution to the informational and educational resources about this important step in the documentary filmmaking process and addresses the lack of resources in this area.

This study successfully and innovatively applied and integrated learning sciences theory, methodology, technology, and instructional design with humanities and arts research. This effective and dynamic approach to designing and developing educational content and resources has made an important and significant contribution to the fields of instructional design, the learning sciences, creative arts and the humanities. This study has significant potential to influence and impact the broad possibilities of contemporary, interdisciplinary research design and collaboration.

Further research could include delving deeper into the need and importance of constructing knowledge and information from authentic, knowledgeable experts and voices in the design and development of instructional content to support, scaffold, and improve overall learning, creativity, and production. This study's design and approach of utilizing information and data literacy could be applied and integrated to different disciplines and fields, including the arts, humanities, and other creative endeavors.

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