The Identity and Success Life Story Method: A New Paradigm for Digital Inclusion

Cynthia E. Winston   Howard University
Cheri L. Philip   Howard University
Derek L. Lloyd   Howard University

To a greater degree than ever before, science, technology, engineering, and mathematics (STEM) drive the U.S. global digital economy, health care delivery, homeland security, and standard of living However, Black students in the nation's public education systems are not afforded high-quality learning opportunities in science and mathematics classrooms, and are more likely to be excluded from opportunities to use technology to enhance their learning and problem-solving skills. The goal of this article is to make the theoretical argument that integrating Design Based Research and the Identity and Success Life Story Research Method creates a new paradigm for research and education projects designed to create educationally and culturally relevant online learning environments that are psychologically accessible and beneficial for Black students.

To a greater degree than ever before, science, technology, engineering, and mathematics (STEM) drive the nation's global digital economy, health care delivery, homeland security, and standard of living (American Association for the Advancement of Science, 1989; DeBell & Chapman, 2003). However, as the need for the No Child Left Behind Act (2002) demonstrates, many of America's citizens are not being well served by the nation's current public education system, particularly in the areas of science, mathematics, and technology education (National Center for Education Statistics, 2002). Black students are among the nation's most underserved in this regard and least likely among all other students to have high levels of participation, achievement, and attainment in STEM across the educational trajectory (American Association for the Advancement of Science, 2001).

More specifically, there is a technology digital divide that persists in creating racial disparities in access to computers and the Internet (Clark, 2003a; DeBell & Chapman, 2003). Only 32.6% of Black households own a computer, compared to 65.6% among Asian Americans, 55.7% among Whites, and 33.7% among Hispanics. Similarly, only 23.5% of Black households have Internet access compared to 56.8% among Asian Americans, 46.1% among Whites, and 23.6% among Hispanics (DeBell & Chapman, 2003).

The complexity of the digital divide is often misunderstood and oversimplified. The digital divide is not simply that Black households experience the lowest rate of computer ownership and Internet access. The implications of the digital divide for the education and the lives of students are more complicated than not having a computer, Internet access, and an e-mail address. The digital divide represents a racial and economic gulf in access to computer hardware, software, and training. It also results in providing Black students fewer opportunities to play a role in the development of online learning content. This physical hardware and intellectual content development technology divide are both denying Black students access to opportunities and valuable learning resources that are important to their academic progress, psychological development, and future well-being as global citizens of the world.

There are many strategies that have and need to be pursued to achieve racial parity in participation in the nation's digital economy. The authors contend that the development and deployment of interdisciplinary research paradigms can make a relatively small, but important, contribution to the problem of the digital divide. Also, these paradigms can simultaneously

address other learning and psychological challenges that face the nation's students. Toward this end, the researchers have developed a Design Based Research project with the Identity and Success Life Story Research Method (ISLSRM) project. One goal of this interdisciplinary psychology, computer engineering, multimedia, and education project is to create a new research paradigm that can be widely applied to other projects that seek to create online environments to stimulate students' informal learning and psychological development. A second goal of this study is to increase students' knowledge, interest, and achievement motivation in STEM learning, research, and careers through their engagement in an online digital library of the life stories of successful Black individuals in STEM fields. A final goal of this project is to collect and analyze life data to generate new knowledge about the psychological complexity of the meaning of race in American society and culture, and explore the challenges such meaning presents for many individuals in their access to high quality STEM education, identity construction, and cultivation of a psychology of success. The purpose of this article is to make the theoretical argument that integrating Design Based Research and ISLSRM creates a new paradigm for research and education projects.

TOWARD A NEW PARADIGM: INTEGRATING DESIGN BASED RESEARCH AND THE IDENTITY AND SUCCESS LIFE STORY RESEARCH METHOD

As a core foundational element of the ISLSRM, a new research paradigm was created for bridging the gap between psychological research and informal learning and psychological development in an online environment. There are several important innovations related to the integration of these two approaches. Design Based Research, primarily focuses on developing models that emphasize teaching and learning of traditional content knowledge, most often applying them within a classroom environment. However, this Design Based Research model focuses on using life data for informal learning and psychological development in an online environment. Although schools are critical sites for learning, informal online communities have been found to facilitate learning, as well as provide students with valuable opportunities to interact with technology (Clark, Jamison, & Sprague, 2005). In a study including 3rd through 12th grade students, Clark (2003b) found that African American students' use of technology over the course of one year had a positive influence on their achievement motivation and career selection.

Design Based Research

Design Based Research is an emerging paradigm that includes methods that bridge theoretical research and educational practice (The Design Based Research Collective, 2003). As such, Design Based Research attempts to be both scientific and educational (Kelly, 2003). It draws on models from design and engineering (Simon, 1996). Design Based Research goes beyond merely designing and testing particular interventions by using theory-driven design to generate complex interventions that can be improved through empirical study and that can contribute to more basic understanding of an underlying theory (The Design Based Research Collective, 2003). Proponents of Design Based Research attempted to "address, simultaneously and iteratively, the scientific process of discovery, exploration, confirmation, and dissemination" (Kelly, 2003, p. 3).

There are many Design Based Research models (see Kelly, 2003); however, the authors chose the Integrative Learning Design Framework (Bannan-Ritland, 2003). There are four design phases included in the Integrative Learning Design Framework. The first is the informed exploration phase. During this phase, the researcher engages in the traditional research design process and conducts a needs analysis. In the second phase, the enactment phase, the researcher undertakes multiple design and intervention cycles. In such, a prototype intervention is developed and piloted within the appropriate target learning environment. This phase, in the design research process, lasts for a considerable period of time. The next phase within this model is the local impact and formative evaluation phase. In this phase, the researcher determines how well the designed intervention satisfies its users, as well as assesses the challenges to ecological validity, successful

dissemination, and adoption in a broader context and for a broader audience. In the final phase of the design cycle, broader impact evaluation, the researcher evaluates the consequences of the use of the products of the research in a classroom or other applied setting.

The Identity and Success Life Story Research Method

The ISLSRM is a case study research method developed at Howard University in the Identity and Success Research Laboratory (Principal Investigator, Cynthia E. Winston). The ISLSRM is designed to do an in-depth study of an individual's life and adopts a psychological, person-centered approach. A person-centered research strategy views the person as the central unit of analysis and takes on an integrated view of the individual as a whole functioning person who develops psychologically over time within multiple contexts. This person-centered approach is consistent with the unique historical mission of the field of personality psychology described by its founders (Allport, 1937; Murray, 1938). That mission was to provide an integrative framework for understanding the whole person (McAdams & Pals, 2006).

Within psychology there are many survey research methods and instruments that are designed to study the psychological significance of race and its relationship to other psychological processes and outcomes (Jones, 1996). However, the authors did not locate a single case study research method or instrument for an in-depth study of lives that would increase an understanding of the meaning of race, the psychology of success, and life experiences that unfold within the multiple contexts in which a life develops. Therefore, the ISLSRM was developed during the informed exploration stage within this Design Based Research model. The ISLSRM includes the following research instruments and strategies of inquiry: the life story telling, the guided race autobiography, collection of personal documents and artifacts, the developmental success matrix, strategic interviews, the NEO Personality Inventory, and the Identity and Success Survey (see Figure 1). The authors will briefly summarize each of the research instruments within the ISLSRM and the important elements of the data collection procedures. The procedure for data collection varies across each research instrument and the order in which the summary is aligned is the order in which data are collected.

The Life Story Telling (LST) is an open-ended instrument designed to encourage the case to employ a stream of consciousness in a selective reconstruction of his or her life story. The LST within the ISLSRM is largely based on both McAdams's (1995) Life Story Interview and Atkinson's (1998) Life Story Interview. As a selective life story reconstruction, the individual does not tell the researcher about everything that has ever happened, but rather focuses on material in the person's life that he or she believes is important and significant about how he or she came to be. By design, this open-ended approach leads to a free association of thoughts, deep introspective sharing of experiences, and construction of multiple narratives. The LST is not guided by specific ready-to-ask questions. The first and only question in the LST is "Where do you want to begin the story of your life?" Each case has the option to tell the story of his or her life in one or two sessions. Data are collected using a digital video camera, as well as an audio digital recorder.

The Developmental Success Matrix (DSM) is a three-column matrix designed to stimulate and document the case's thinking about success across the lifespan. The individual is asked to include in the DSM the names of as many people as the he or she can remember who have contributed to the case's success in any way. The case is encouraged to incorporate individuals who were positive forces in his or her success, as well as those who were negative, in their action or words, but nonetheless, had an influence on his or her success. There are 15 rows provided within the DSM; however, the case can insert additional rows within the matrix as needed.

The NEO is an assessment that is widely used within the field of psychology to measure personality traits that delineate personality structure. Guided by the Five Factor Model (McCrae & Costa, 1999), the NEO measures the following five major dimensions of personality: (a) neuroticism, (b) extraversion, (c) openness, (d) agreeableness, and (e) conscientiousness. Each personality dimension is composed of several underlying and specific traits that further delineate the structure of personality.

The Guided Race Autobiography (GRA) is an autobiographical, semi-structured, and thematic research instrument developed in the Identity and Success Research Laboratory at Howard University (Burford & Winston, 2005). It is designed to elicit and study individual narrative race experiences, the evaluative reflections made from these experiences, and the significance and meanings ascribed to these experiences. The GRA is a modified version of the 1997 revised Guided Autobiography developed by McAdams to study the thematic lines in narrative identity and has been used in several studies (e.g., McAdams et al., 2004; McAdams et al., 2006). The Guided Autobiography and the GRA are similar in that the Guided Autobiography asks the participant to construct autobiographical narrative accounts across key scenes or personal episodes from the past that stand out as particularly vivid or important in his or her life. The point of departure from McAdams's Guided Autobiography is that the GRA asks the participant to reconstruct narratives related to key episodes across the life course related to race.

For both the GRA and Guided Autobiography, the participant is provided instructions that ask him or her to make sure that each narrative describes what happened in the event, when the event happened, who was involved in the event, and what the participant was thinking and feeling during the event. In addition, the instructions ask the participant to consider why he or she has chosen this particular scene for his or her narrative construction (McAdams et al., 2006). In the GRA, the participant was asked to construct a narrative related to the following 7 episodes which are the same as those within the Guided Autobiography with the exception of asking about episodes related to race: (a) "race earliest memory," (b) "race important childhood scene," (c) "race important adolescent scene," (d) "race peak experience," (e) "race nadir experience," (f) "race turning point," and (g) " race continuity."
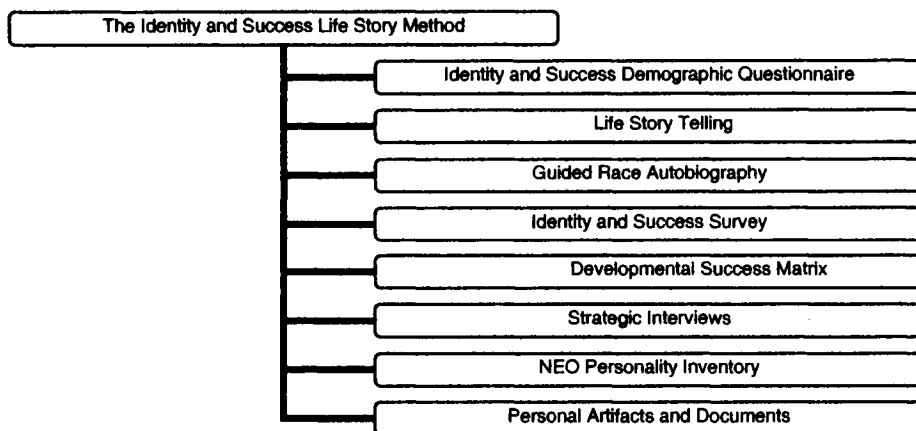

Figure 1. The Identity and Success Life Story Research Method

The Identity and Success Survey includes compilations of validated and widely used measures within the field of psychology. These measures include, but are not limited to, measures of achievement motivation, personal and social identity, phenotypic variation, personal strivings, and mental health measures used in the field of psychology (Cross, 1991; Emmons, 1986; Jones, 2003; Sellers, Rowley, Chavous, Shelton, & Smith, 1997).

Several strategic interviews are conducted as part of the Identity and Success Life Story Research Method. These strategic interviews are semi-structured interviews that are designed to stimulate the cases to talk in-depth about specific life experiences and contexts of their development. For some cases, there is considerable overlap between what is discussed in the life story telling and the strategic interviews. However, the case is encouraged to continue discussing a topic, if it is relevant, even if it has been previously discussed. Topics within the strategic

interviews include research interests, educational experiences, interpersonal relationships, life interests, achievement motivation, influences on success, and the meaning of race within American society and culture. Each strategic interview is conducted in one session that lasts between one and two hours. An interview protocol is used to guide the researcher; however, as a semi-structured interview, each question is not asked of every case. Instead, the researcher seeks to make sure that each topic is covered.

After the researchers have collected the data using the ISLSRM in the first phase of the Design Based Research model, they begin the data analysis process for the traditional psychological research. The different interview and survey methods within the ISLSRM yield different types and formats of data, which require data processing and an analysis using multiple, traditional analytic techniques appropriate to the video, text, numeric, and image data. These analytic techniques include, but are not limited to, thematic content analysis (van Manen, 1990), discourse analysis (Wood & Kroger, 2000), and descriptive statistical analysis. The goal of this initial psychological data analysis is to understand the meaning of race within each case's life, and how that is constructed in relation to his or her cultivation of science identities, psychological negotiation of race, and socialization of a psychology of success. This data analysis is designed to result in further development and refinement of the theory of race self-complexity, as well as culminate in dissemination of discrete studies in psychology peer-reviewed journal articles.

In terms of the educational goal of creating a life story knowledge resource for dissemination in an online learning environment, the same data used for peer-reviewed journal articles are the first to be considered for inclusion. This is because they represent the meaning and negotiation of educational and life experiences that are important for informal science learning and psychological development. These same data are only the starting points, because there are several other considerations for development of the final life story knowledge resource prototype for each case.

In constructing the life story knowledge resource prototype the authors not only used psychological data, but they also developed and included a case profile. The case profile includes, but is not limited to, the case's sociographic background across key developmental periods of his or her life, history of educational environments across the educational trajectory, focus of research, current career position or appointment, immediate and extended family structure, and socioeconomic background of family across time.

Video data drawn from the interview methods within the ISLSRM are over-sampled in the prototype development for each case in the online life story knowledge resource. This is important because the platform for dissemination is an online environment, and Black students should be stimulated to come to the digital collection and use it for informal learning and psychological development. The life story knowledge resource prototype is constructed using I-Movie editing software (Apple Inc., 2006) which is easy to manipulate and can handle all of the different types and formats of data generated by the ISLSRM. The resulting form of the life story knowledge resource prototype is similar to that of a video documentary. This process is used to create a life story knowledge resource with a collection of video documentaries of cases of successful Black scientists and engineers from diverse research, geographic, generational, and experiential backgrounds.

TOWARD MORE DIGITAL INCLUSION FOR BLACK STUDENTS: THEORETICAL CONSIDERATIONS

There are several theoretical reasons why the paradigm of integrating Design Based Research and the ISLSRM has promise for contributing to the goal of creating more digital inclusion for Black students. In advancing this theoretical argument, the authors seek to illustrate how this new paradigm serves as a model and catalyst for addressing not only problems of national importance, but also, many others related to aspects of informal learning and psychological development.

A critical aspect of engaging Black students in and attracting them to an online environment is generating online content and knowledge bases that provide opportunities for them to engage in informal education and psychological development in areas that are educationally important and culturally relevant. The life data collected through the ISLSRM and enabled by a Design Based Research approach generates culturally, educationally, and psychologically relevant content. The authors' approach to attract and maintain students' interests in online learning and psychological development is to use the paradigm to generate, disseminate, and evaluate the content that addresses two related problems that are critical for the lives and future of Black students: low interest, performance, and attainment in STEM; and psychological negotiation of the meaning of race within macro- and micro-environments of socialization and psychological development.

A National Challenge: Interest, Performance, and Attainment of Black Students in STEM. For Black students, one area of critical educational importance is engaging their interest, participation, achievement, and attainment in STEM education across all levels of the educational trajectory. At a time when STEM is critical to all aspects of the nation's economy, labor market, and standard of living, Black students over time have been faring worse than all other American students (see Figure 2). Among Black students in the nation, only five percent of 8th graders are proficient in mathematics, while five percent of 8th graders and three percent of 12th graders are proficient in science (National Center for Education Statistics, 2002; Perie, Grigg, & Dion, 2005). Within higher education, Black students are also severely underrepresented in STEM at the highest levels. For example, less than 5 percent of all of the doctorates earned in the nation in science and engineering are earned by individuals who are Black (National Science Foundation, 2006).
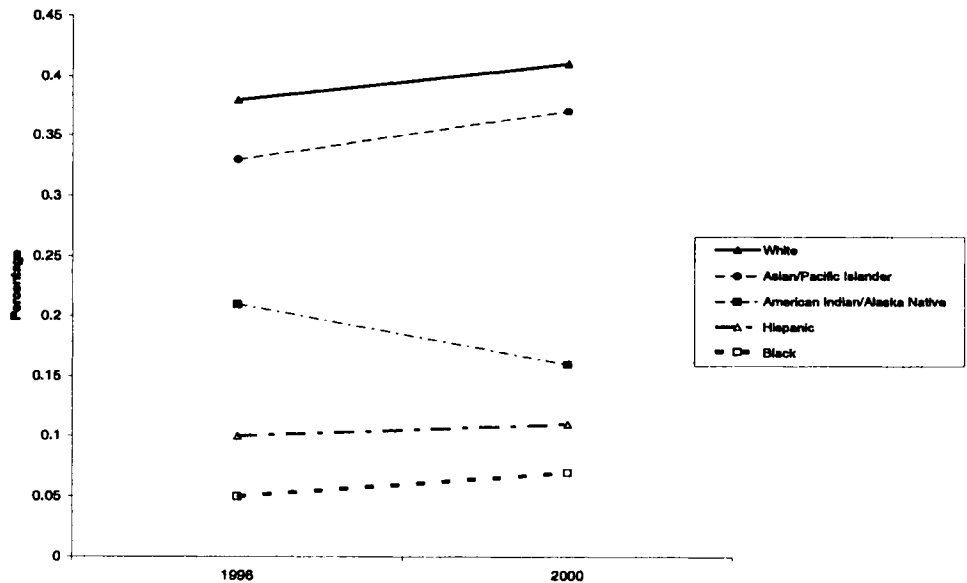

Figure 2. Percentage of 8th grade students at or above proficient in science (1996-2000)

Data from National Center for Education Statistics, National Assessment of Educational Progress (NAEP). (2002). *The nation's report card: Science 2000.* Retrieved February 7, 2006, from http://nces.ed.gov/nationsreportcard/pdf/main2000/2003453.pdf

It is also well-established that Black students in elementary and secondary schools have fewer opportunities to learn science and mathematics compared to their White counterparts (American Association for the Advancement of Science, 1989, 2001). African American students in the nation's schools experience less-extensive and less-demanding science and mathematics curricula and programs; low expectations and judgments of their ability that lead to tracking; less-qualified science and math teachers; less access to resources, such as science facilities and equipment; and fewer opportunities within the classroom to develop inquiry and problem-solving skills (Darling-Hammond, 1985; Oakes, 1987). Therefore, very few Black students have the opportunity to have positive exposure to science and mathematics in which they can nurture their natural curiosity, engage in research, and build careers. However, the integrative paradigm generates and disseminates life data in the form of life stories that has intrinsic and practical interest for students who want to learn about what science is, what scientists do, or how a career in science can contribute to their community and to society.

Race Self Complexity and the Psychology of Success: Psychological Negotiation of Race within STEM. Another area that is related to Black students educational success in STEM, but is also related to the more general experience of being Black in American society and culture, is understanding and socializing the diversity of ways in which Black students psychologically negotiate the meaning of race in their lives and cultivate a psychology of success that can help facilitate successful educational and life outcomes. Understanding the success of Black students in STEM requires serious interrogation of the psychological demands they face in the process of negotiating internal and external stimuli about the meaning of race as they construct an academic identity, science identity, and psychology of success. The Identity and Success Life Story Research Method generates life data to advance the development of the theory of race self complexity. This is a new narrative theory of personality that seeks to explain the complexity that the meaning of race can add to an individual's identity construction and cultivation of a psychology of success (Winston, et al., 2004; Winston & Kittles, 2005). More specifically, this theory explains the nature, form, and psychological function of race narratives (Burford, 2006; Burford & Winston, 2007; Mangum, 2006; Terry & Winston, 2006, Rice, 2007). In so doing, one core tenet of this theory is that the concept of race is a part of American culture that has psychological meaning. As such, the theory of race self complexity does not conceptualize race simply as a category to which a person belongs. Instead, it is conceptualized from a cultural-historical perspective (Winston et al., 2004; Winston & Kittles, 2005) whereby race has psychological meaning as part of American culture. Thus, the theory of race self complexity is undergirded by the assumption that for individuals who are Black, the outcome of success is complicated by its high individual and collective stakes, layered meanings, collective residues, and unique perspectives.

Within science education, there is a dearth of research on the psychological factors related to STEM success, as well as an overwhelming trend to focus on pursuing questions about failure and a lack of interest among Black students in STEM across the educational trajectory (American Association for the Advancement of Science, 2001). The theory of race self complexity conceptualizes success not only as a product or result, but also, in terms of a mindset or a psychology of success. The psychology of success is an internalized narrative or mindset that individuals can cultivate and draw on to direct behavior, thoughts, and emotions in achievement-oriented academic and non-academic situations. It is not clear what stimuli and implicit or explicit socialization experiences create such a mindset. The Identity and Success Life Story Research Project seeks to gain a better understanding of this mindset or disposition through in-depth study of the lives of individuals in STEM who have achieved educational or professional success. Although all individuals who have achieved success may have not cultivated a psychology of success, it is the authors' belief that studying these individuals may contribute to further theory development.

Storied Form and Human Nature: Developing a Knowledgebase for Online Learning and Psychological Development That Is Psychologically Accessible to Students

An additional strength of the integrative paradigm for engaging students in an online environment is the psychology of stories within individuals' lives. The storied nature of both the ISLSRM and the online deployment of content in the enactment stage of the Design Based Research process are aligned with the natural human capacity for individuals to think in storied terms. Within the field of narrative psychology, there is considerable evidence that it is human nature for individuals to psychologically negotiate, organize, renegotiate, and represent meaning of their internal and external experiences in a storied form (Bruner, 1990; Sarbin, 1986; Singer 2005). Narrative assumptions are explicit within some of psychology's most well-known "grand theories" of personality, including those of Adler (1927), Jung (1969), and Murray (1938).

In other words, human beings have a psychological readiness, socialized at a very young age, for thinking in terms of setting, scenes, characters, plot, and theme (Bruner, 1990; Sarbin, 1986). This natural tendency of individuals to think in storied terms suggests that including structured content in a storied form will make the online content psychologically accessible to students and other individuals. Thinking in storied terms spans across all individuals' developmental periods and ages. Therefore, the online knowledge learning resource can be useful for students across the educational trajectory. This psychological familiarity with the features of narratives and stories across the lifespan is very important to the user's ability to capitalize on the life story knowledge resource as a learning tool.

This human capacity to think in storied terms is also linked to the structure and content of the life story knowledge resource through the role of prior knowledge in learning. Research within the field of cognitive science has demonstrated the key role that prior knowledge plays in learning (Bransford, Brown, & Cocking, 1999). The authors contend that a psychological familiarity with stories can serve as a form of prior experiential knowledge that can have several important benefits. It has the potential to attract students to the life knowledge resource because they have schemas for stories. The life story knowledge resource also has a higher likelihood of sustaining students' interest than the content presented in a different format because learning about STEM and psychologically negotiating race is presented in a common storied format that they are accustomed to or have had some prior experiences.

The authors further contend that the familiar storied format of the data collection methods within the ISLSRM and the Design Based Research enactment phase may stimulate students who are initially users of the life story knowledge resource to generate ideas about developing their own online content. For example, a student who was initially a user may decide that he or she would like to use the life story-telling method within the ISLSRM to collect data on the educational experiences of his or her grandmother, as well as other family members. He or she may then decide to use these data that were collected to create a family Web site, either for a family reunion, a class project, or to create a family history. Again, the storied nature of the data collection methods would be psychologically accessible to a user, and thus, may motivate him or her to create other online knowledge resources that may be culturally or educationally relevant.

Application to Other Informal Learning and Psychological Development Online Projects

Although the integration of Design Based Research and the ISLSRM is used to directly contribute to students' psychological development in terms of cultivation of science identities, psychological negotiation of race, and socialization of a psychology of success, the authors believe that this new paradigm can be employed with other types of informal learning and psychological development within an online environment. The strategies of inquiry and research methods that comprise the ISLSRM are designed to generate multiple types and formats of data. Therefore, researchers interested in using life data other than those related to identity, race, or success, could use other life data to develop into a knowledge resource and deploy it in an online learning environment.

For example, if a researcher is interested in creating an online learning environment using life data about the diverse experiences of individuals during the college application process, the integrative model could be applied. Similarly, the researcher could make decisions within the evaluation phase regarding how to combine the video data, text data, and image data to create an online knowledge resource that achieves the learning or psychological objectives of the specific project.

Although the strength of this integrative paradigm is the combination of its storied content and online presentation format, it could also be developed using different presentation structures for other types of applications in an online environments. In other words, there is nothing inherent in the integrative paradigm that makes a life story knowledge base the only type of knowledge base that could be developed from all of the data generated from the multiple research methods within the ISLSRM. For example, the data generated from the ISLSRM could be structured in the online environment as data files using Microsoft Excel, Microsoft Word, or Statistical Packages for the Social Sciences (SPSS). Research scientists from psychology, education, sociology, and other disciplines could then use these databases for secondary data analysis to answer research questions that require the types of rich contextualized data that are collected. There are very few online databases available to research scientists with psychological life data; however, there increasingly are Black students in graduate programs and early career research scientists who have interest in conducting research on the lives of individuals. Therefore, this type of knowledge resource may have appeal for bringing more Black research scientists into the use and perhaps eventual development of online content that is culturally relevant to the research that they want to conduct, as well as to their own lives.

CONCLUSION

The new paradigm of integrating Design Based Research and ISLSRM has the potential to have an impact on several critical areas within STEM education, psychological research, and human lives. It is novel and seeks to integrate multiple theoretical and methodological orientations. Moreover, it integrates research and dissemination in ways that ensures that the online content is generated from a strong theoretical and methodological research base, which is provided by the Identity and Success Life Story Research Method. The content that the authors make available in the life story knowledge resource in the online environment is not a random collection of content. It emerges as part of an integrated research process. This approach allows one to merge a strong theoretically and methodologically grounded research approach from psychology with a model for disseminating data in an online environment for the cultivation of science identities, psychological negotiation of race, and socialization of a psychology of success. There are very few knowledge resources available online that are based on a strong theoretical approach grounded in psychological research.

Through the life story knowledge resource, students and others will have an opportunity to observe the retrospective analysis of the complexity and variation of the meaning of race within the lives, self-understandings, and success schemas of Black individuals who have achieved success in STEM fields. How do they understand themselves as students, as science students, and individuals who live and are educated within a society in which the meaning of being Black has complex cultural historical and biopsychological manifestations? At the highest levels of the STEM educational and professional trajectory, how do they psychologically negotiate their experiences of racial isolation and the burdens imposed by such isolation to perform, behave, and think as a representative of their racial group? What opportunities do Black students have to see or meet an individual who has majored in, attained a degree in, or has a career in a STEM field? How does this shape their achievement motivation toward success in STEM?

In summary, the Identity and Success Life Story Research Project promises to create an educationally and culturally relevant online learning environment for Black students. There is evidence that Black students' learning, achievement motivation, performance and psychological well-being are promoted when they learn within culturally relevant classroom learning environments (Boykin, Lilja, & Tyler, 2004). It is likely that an online learning environment will

result in similar positive outcomes. The digital divide and the under representation of Black individuals in STEM education and careers is a multifaceted national problem that will require researchers working across many disciplines. The authors' research and education project is one model of the type of contribution that an interdisciplinary team of psychologists, computer scientists, and computer engineers can make. It also underscores the importance of psychological research in bringing more Black students into the 21st-century digital nation and understanding the race self complexity they experience within their lives. The consequences of failing to do so will be grave and perhaps irreversible.

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AUTHORS

CYNTHIA E. WINSTON is Assistant Professor in the Department of Psychology and Principal Investigator of the Identity and Success Research Laboratory Howard University and she is a Visiting Scholar at the University of Michigan.

CHERI L. PHILIP is a National Science Foundation/ISRL Postdoctoral Fellow at Howard University.

DEREK L. LLOYD is Senior Engineer, Howard University, Office of the Senior Vice President.

All comments and queries regarding this article should be addressed to cewinst@umich.edu