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Designing global futures: A mixed methods study to develop and validate the teaching for global readiness scale

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HIGHLIGHTS

- Instructional practices that promote global readiness were examined.
- Four dimensions identified: situated practice, integrated global learning, critical literacy, and transactional experiences.
- End product was the Teaching for Global Readiness scale with 19 items.
- Provides empirical foundation for evidence-based theories, policies, and practices for global readiness education.

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ABSTRACT

In response to globalization, leaders have called for more global education in K-12 schools. This study utilized a sequential exploratory mixed methods design to validate the construct teaching for global readiness. After exploratory qualitative analysis of 24 expert teacher interviews, an instrument was developed and administered to K-12 U.S. classroom teachers. Based on EFA and CFA, four factors were interpreted as: situated practice, integrated global learning, critical literacy instruction, and transactional experiences. The end product was a measurement model and scale of teacher practices related to global readiness instruction.

1. Introduction

Globalization has become a major issue in the field of education (e.g., Darling-Hammond, 2010; Delores et al., 1996; Stewart, 2012). Globalization has been associated with a flattened world economy (Friedman, 2006), higher global migration (Suarez-Orozco, 2001), and changing demands on the workforce (Levy & Murnane, 2007). In response to globalization, education leaders have called for more global education in U.S. K-12 schools (Mansilla & Jackson, 2011; Reimers, 2009). In 2012, the United States Department of Education (USDOE) issued a report entitled *Succeeding Globally through International Education and Engagement* that included the following goal: "Increase the global competencies of all U.S. students, including those from traditionally disadvantaged groups" (p. 5). This means that in addition to graduating college, career, and civic ready, all students should graduate "global ready." The report defined *global competencies* as "21st century skills applied to the world" (USDOE, 2012, p. 5). Twenty-first century skills include collaboration, communication, and problem solving (Partnership for 21st Century Skills, 2014), so applied to the world this would mean cross-cultural collaboration, cross-cultural communication, and solving global problems. Proponents believe that comprehensive global education may help students access the global job market and solve global social issues. Reaching this goal requires instruction focused on global readiness for all K-12 students.

The public seems to agree. According to a report by the Association of International Educators, over 90% of Americans believe that global education is a key to preparing children for success in the 21st century (NAFSA, 2003). However, some business leaders believe U.S. schools are not producing enough global ready graduates (Committee for Economic Development, 2006; Stewart, 2012). Since the turn of the century, concern for the global readiness of U.S. graduates has increased (e.g., National Governors Association & Council of Chief State School Officers, 2010).

To address the need for global education, internationalizing preservice teacher education has become a growing focal point in teaching and research (e.g., Cushner, 2012; Merryfield, 2000; Zhao,

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2010). Much of the literature focuses on increasing global competence of preservice teachers. However, little is known about teaching practices that lead to global readiness at the K-12 level (Cushner, 2012). Based on a synthesis of the literature, *global readiness* refers to *global citizenship with the multiliteracies necessary in the 21*st *century to participate, collaborate, and work in a global society*.

In October of 2014, the Partnership for 21st Century Skills (P21) announced the Framework for Global Education. The framework, written by VIF International (formerly, Visiting International Faculty), sets standards for global ready teaching and learning in every subject for every grade K-12. While the P21 framework is conceptually sound, it is not empirically tested. This study aims to fill the gap in the research by offering an empirically-tested framework for teaching for global readiness.

The purpose of this study was two-fold. The primary purpose was to validate the construct of teaching for global readiness applied to the U.S. K-12 schooling context. The theoretical underpinnings for this study were based on sociocultural teaching and learning theories, and therefore teaching and learning are viewed as particularized to the sociocultural context, in this case the U.S. The secondary purpose was to develop a scale that collects an array of data on teaching practices that promote students' global readiness. The exploratory sequential mixed methods design allowed the researcher to examine a small sample qualitatively and then to determine whether the qualitative findings generalized to a large sample. The overarching question for this study was:

- How can we operationalize teaching for global readiness?

The sub-questions were:

- What did global education experts believe were the components of teaching for global readiness at the K-12 level? (QUAL)
- What are the factors of the construct teaching for global readiness? (quan)
- To what extent did the quantitative results confirm the qualitative findings? (MM)

2. Review of relevant literature

Much of the empirical literature on global education is from higher education or business fields on why global education is imperative in the 21st century. International researchers assert that global education is needed because globalization has flattened the world economy, the demands on the workforce are changing, global migration is higher than in the past, and the climate is changing (Hansen, 2010; Mansilla & Jackson, 2011; Walsh, 2016). Comprehensive global education may help students respond to the global changes in the job market and global social issues. In this section I will first synthesize the research on the changing job market and then the globalization of social issues.

In the past, education focused on reading, writing, and arithmetic—specifically reading print texts, writing that was formal and academic, and calculating arithmetic—in order to prepare students for work in an industrialized society. However, international research indicates that work life has changed (Gardner, 2009; Levy & Murnane, 2007; Schleicher, 2015; Walsh, 2016). Work life in the 21st century for the middle class job market includes gathering and analyzing information, communicating using technology, and solving problems (Leu, Kinzer, Coiro, Castek, & Henry, 2013; Gardner, 2009; New London Group, 1996). 21st century work in the knowledge industry includes being able to think creatively and critically as well as communicate and collaborate interculturally (Deardorff, 2006; New London Group, 1996; Schleicher, 2015). In addition, research has demonstrated that global economic issues have resulted in increased migration across borders in search of employment (Walsh, 2016). Increased global migration raises students' chances of working with diverse others, calling for the relevant skills to do so effectively.

Global education may increase students' social networks. Students' network of global connections established in school may be useful for conducting international business in the future (Bremer, 2006). Through these increased networks, collaborations hold the potential to teach students about culture. Students may gain international perspectives, deeper appreciation of other countries and cultures, and knowledge of diverse societies' contributions (Bremer, 2006; Hadis, 2005; Sussmuth, 2007; Van Hoof & Verbeeten, 2005). Empirical studies on cross-cultural collaborations in school have found ethnocentrism is reduced (Union & Green, 2013), stereotypes are reduced, and respect for other cultures is increased (Besnoy, Maddin, Eisenhardt, & Steele, 2015). Not only do students have the potential to learn about other cultures, they can learn about their own culture as well (Myers & Eberfors, 2010; Smiles, 2001). When students observe other cultures, they may see other ways of knowing and doing. Comparison and contrast can help students identify their own cultural beliefs, values, and customs. Global education holds promise to promote important interpersonal skills, such as cross-cultural communication and collaboration (Akande & Slawson, 2000; Lindsay & Davis, 2013; Sussmuth, 2007) as well as intrapersonal skills, such as identity clarification (Banks, 2008; Hull, Stornaiuolo, & Sahni, 2010).

Challenges faced locally or nationally often go beyond borders and impact diverse groups of people. Likewise, international issues can have serious effects on local communities (Mansilla & Jackson, 2011; New London Group, 1996; Noddings, 2005). According to the National Academy of Engineering (2015), today's global challenges include ending extreme poverty, providing sustainable green energy, increasing fair global trade, reducing epidemics, and promoting peace and social cohesion. Research suggests that these global challenges require citizens to "make informed judgments by accessing accurate information, discerning the nuances of multiple points of view, and communicating their own perspectives to affect change" (Orozco-Domoe, 2015, p. 61). Moreover, the way that the global citizenry of the 21st century advocates for desired civic actions may require the use of communication technology and other tools that did not exist even a few years ago or that have yet to be imagined (Leu et al., 2013; New London Group, 1996; Partnership for 21st Century Skills, 2014). To solve the global issues of today, students may need to develop the same skills described above for today's workforce (Gardner, 2009). Future graduates may need to be both globally competent and multiliterate in order to be successful as they use technology to work and interact with culturally and geographically diverse people (New London Group, 1996; West, 2010). Following this line of reasoning, global citizenship and multiliteracies combine to form the construct global readiness.

Two empirical studies have developed and validated a construct related to global readiness. Deardorff (2006) utilized a qualitative Delta method to define and validate the construct of international competence. Morais and Ogden (2011) utilized quantitative methods to develop and test the factors of global citizenship. Both of these studies were intended to measure the construct with undergraduate students. While Deardorff's model is frequently cited in higher education, Morais and Ogden's scale is beginning to be utilized in K-12 research because of its apparent relevance to people of all ages. However, neither of these studies addressed teaching. The next section will describe the teaching theories that framed the study.

3. Theoretical framework

The theoretical framework for teaching for global readiness is composed of educational cosmopolitanism (Hansen, 2010; Spector, 2014) and pedagogy of multiliteracies (Cope & Kalantzis, 2015; New London Group, 1996) as demonstrated in Fig. 1. Pedagogy of multiliteracies embraces what Gee (1999) called the "social turn" and Mills (2010) called the "digital turn" in education. In addition to embracing the social and the digital, Hull and Stornaiuolo (2010) call for a "cosmopolitan turn" in education. Together pedagogy of multiliteracies and educational cosmopolitanism address the three modern "turns" in education. In addition, both theories were generated in response to globalization, the context of this study.

According to Banks (2008) and the New London Group (1996), tensions in the field of education exist between local and global, private and public, and tradition and innovation, among others. These tensions suggest that students develop a way to negotiate being open to the new, while remaining critically reflective of the present. Students can develop multiplicity of literacies, especially critical literacy (McLaughlin & DeVoogd, 2004); multimodal literacy (Jewitt & Kress, 2003); multilingual literacy (Cope & Kalantzis, 2009); and new social practices, skills, and dispositions needed for new literacies (Leu et al., 2013; New London Group, 1996). They can develop global competence, a sense of social responsibility, and engagement in global civic issues (Morais & Ogden, 2011). When students socially engage as global citizens, they are embracing a cosmopolitan identity (Hansen, 2010; Wahlström, 2014).

3.1. Educational cosmopolitanism

Cosmopolitanism recognizes universal values and also encourages tolerance for differing beliefs (Appiah, 2006). Hansen (2010) termed the theory of cosmopolitanism specific to education *educational cosmopolitanism*. Wahlström (2014) conceptualized *educational cosmopolitanism* as having four dimensions: reflexivity, hospitality, intercultural dialogue, and transactions of perspectives. Reflexivity emphasizes the critical component of cosmopolitanism and hospitality emphasizes the ethical (Spector, 2014). Teachers grounded in educational cosmopolitanism teach critical global citizenship, which uses inquiry and critical literacy in order to change systems of inequality (Andreotti, 2006; Delanty, 2012; Wright & Andreotti, 2012) and ethics whereby people care for human lives whether those lives are local, national, or global in relation (Appiah, 2006; Wahlström, 2014). Teachers have the potential to discuss with students the relationships and the tensions in loyalties to the local, the regional, the national, and the global (Delanty, 2012; Delores et al., 1996; Rizvi, 2008). In this theory, people across the world are united in a global community with shared universal values while at the same time recognizing and respecting differences (Appiah, 2006; Wright & Andreotti, 2012; Rizvi, 2008). The theory also acknowledges the diversity within a culture and encourages dialogue as part of learning (Appiah, 2006; Hansen, 2010).

For the purpose of this study, intercultural dialogue and transactions of perspectives are the most pertinent.

Intercultural dialogue. The tension described above between resisting and accepting change can be viewed as an ethical concern in education because blanket tolerance does not work in a classroom. Cosmopolitanism provides a normative ethical theoretical lens (Wahlström, 2014). In other words, the theory provides criteria for deciding what is right and wrong. Teachers do not have to tolerate all behaviors, however, teachers grounded in educational cosmopolitanism attempt to investigate behaviors through the lens of those practicing that custom before judging. In this way, both teachers and students practice "critical tolerance" (Hansen, 2010, p. 7). For example, sexism (i.e., oppression based on gender) would not be tolerated in the classroom but differences in social constructions or deconstructions of gender would be tolerated.

With this philosophical foundation of critical tolerance, teachers grounded in educational cosmopolitanism facilitate dialogue between students of different cultures within the class and with people from different cultures outside of the classroom. Teachers utilize technology and community resources in order to facilitate both virtual and face-to-face conversations. Students are encouraged to listen to multiple perspectives, articulate similarities and difference, and respect differing positions. As students engage in intercultural dialogue, they learn from each others' perspectives and reflect on their own perspectives.

Transactions of perspectives. Hansen (2011) explains that teachers have the opportunity to give students experiences of "reflective openness to the new fused with reflective loyalty to the known" (p. 86). Students critically evaluate their own perspectives and new perspectives in order to construct knowledge for themselves. Cultures progress, but engaged citizens do not adopt change blindly. Engaged citizens practice critical inquiry and reflexivity as they encounter new perspectives. During intercultural dialogues and critical inquiry processes, teachers grounded in educational cosmopolitanism facilitate transactions of perspectives across cultures. In transactions of perspectives, cosmopolitan teachers promote equality. Students interact with others, sharing ideas and perspectives in a way that requires a give and take from both parties equally.

Fig. 1. Teaching for global readiness theoretical framework.

Intercultural dialogue and transactions of perspectives are key parts of educational cosmopolitanism that students utilize to create their futures (Wahlström, 2014). Cosmopolitan education does not replace skills and knowledge acquisition for career and college preparation. Instead, it "opens a space" for social justice education alongside "preparation for productive life" (Hansen, 2010, p. 22). This space opens the possibility for critical social theory in the classroom where students learn through experiences that are unfamiliar and teachers help them experience multiple perspectives (Delanty, 2012). This space helps students clarify who they are and who they want to become in relation to the world and helps them develop self-reflexivity – investigating oneself as affecting and being affected by society. This space also helps them learn cross-cultural communication, cross-cultural collaboration, and respect for others. Teachers do not just show students the world as it is, but help students to develop the attitudes, knowledge, and dispositions needed to solve the great challenges we face as a world, such as perspective-taking, empathy, reflection, collaboration, and problem-solving. In summary, a critical global citizen utilizes reflexivity, intercultural dialogue, and transactions of perspectives as part of critical inquiry processes to create a more just social future.

3.2. Pedagogy of multiliteracies

Pedagogy of multiliteracies was conceptualized by a group of prominent literacy scholars who met in New London to discuss the current state and the future of literacy pedagogy. Their collective analysis was that the world had become more locally diverse and globally connected, that the workplace now valued multiskilled workers, and that information and communication technologies were producing a variety of multimodal texts. They agreed that a monolingual, monocultural literacy pedagogy should not be taught anymore and coined the term "multiliteracies" to account for the plurality of text types and discourses that could be taught to students with differences in culture, language, gender (New London Group, 1996, p. 63), and ability (Cope & Kalantzis, 2009).

The purpose of education according to pedagogy of multiliteracies theory is for students to be able to fully and equitably participate in social, public, and economic life (New London Group, 1996). To do this, pedagogues utilize diversity as a resource not as a barrier or a deficit to quality education (Kim & Slapac, 2015). To address the diverse needs of students, practitioners (a) situate the learning in a relevant way, (b) utilize overt instruction to demystify discourses, (c) teach from a critical frame, and (d) facilitate knowledge construction so that students are transformed through the learning (New London Group, 1996). Most pertinent to this study are situated practice and critical framing.

Situated practice. Situated practice means that learning is relevant, authentic, and social. This pedagogy makes learning relevant by considering the community, both in the classroom and the larger society within which the learning is taking place. This involves leveraging the texts and topics students are excited or concerned about to build learning conditions that are relevant to students' lives outside of school. In addition to relevant content, situated practice involves authentic inquiry-based learning experiences and collaborative learning opportunities for students to work together to construct knowledge in ways that build 21st century skills (Al-Maamari, 2014; Lindsay & Davis, 2013; Spires, Chang, Bot, & Himes, 2015; Union & Green, 2013).

The teacher's job is to create communities of practice where students feel secure, can take risks, and trust the other members of the community. Each community of practice must include an expert, the teacher or a peer who has already mastered the objective or practice (Cope & Kalantzis, 2009). This pedagogy recognizes the rich cultural heritages students bring with them to school, capitalizing on students' diverse expertise as resources to the community (Kim & Slapac, 2015; Mills, 2006). However, the New London Group found that while situated practice is important for learning motivation, it is not enough to bring students to mastery. Students needed awareness of their learning and of the historical, political, and cultural context of their experiences. Following this line of reasoning, this pedagogy must include overt instruction and critical framing in addition to creating a community of learners.

Critical framing. When employing pedagogy of multiliteracies, students' diverse cultural experiences and perspectives are valued as resources. Educators should practice critical analysis of the systems within and outside of the classroom to interrupt assumptions, ensure that cultural barriers are broken down, and that differences are seen as resources. They should also teach students to think critically and to inquire using critical literacy (Cope & Kalantzis, 2015; Hull et al., 2010).

Teaching through a critical lens creates opportunities for students to see familiar things in a strange light, in other words, to look from multiple perspectives outside of their norms. *Critical framing* means that teachers integrate critical literacy by questioning the authority of the author/speaker within the content curriculum (McLaughlin & DeVoogd, 2004) while also modeling respectful dialogue – or in the words of cosmopolitanism, *hospitable dialogue* (Hull et al., 2010). Just as cosmopolitanism does not tolerate injustice, pedagogy of multiliteracies emphasizes that the goal of education is "not to produce docile, compliant workers." Students develop the capacity "to speak up, to negotiate, and to be able to engage critically with the conditions for their working lives" (New London Group, 1996, p. 66). Critical framing holds the potential to give students the tools to tear down systems of inequality and potentially design new, equitable systems. Taken as a whole, pedagogy of multiliteracies is based on social learning theory (New London Group, 1996).

4. Methods

A sequential exploratory mixed methods design (QUAL → quan) was utilized to develop the teaching for global readiness (TGR) scale following established psychometric standards and criteria (Benson & Clark, 1982; Comrey & Lee, 1992; Nunnally, 1978). The method sequence began with qualitative data collection of expert interviews, qualitative data analysis, instrument development based on interview data, quantitative data collection through an online survey of 630 participants, and finally factor analysis of quantitative data. A full design diagram is displayed in Fig. 2.

Mixed methods are well-suited for instrument design (Benson & Clark, 1982; DeCuir-Gunby, 2008; Vogt, King, & King, 2004). Together the quantitative and qualitative samples provide the narratives and the numbers to produce breadth and depth of data. Mixed methods enabled both comprehensive and generalizable meta-inferences (Onwuegbuzie & Johnson, 2006). The following sections will explain the qualitative and quantitative procedures utilized to develop and validate the teaching for global readiness scale.

4.1. Qualitative phase

In an exploratory research design, the hypothesized definition does not come first. Instead, the participants' views come first.

Participants. For the first part of the study, I interviewed 24 experts. Experts can be defined as researchers of the construct or members of the target population who have direct experience with the construct (Vogt et al., 2004). For the purpose of this phase,

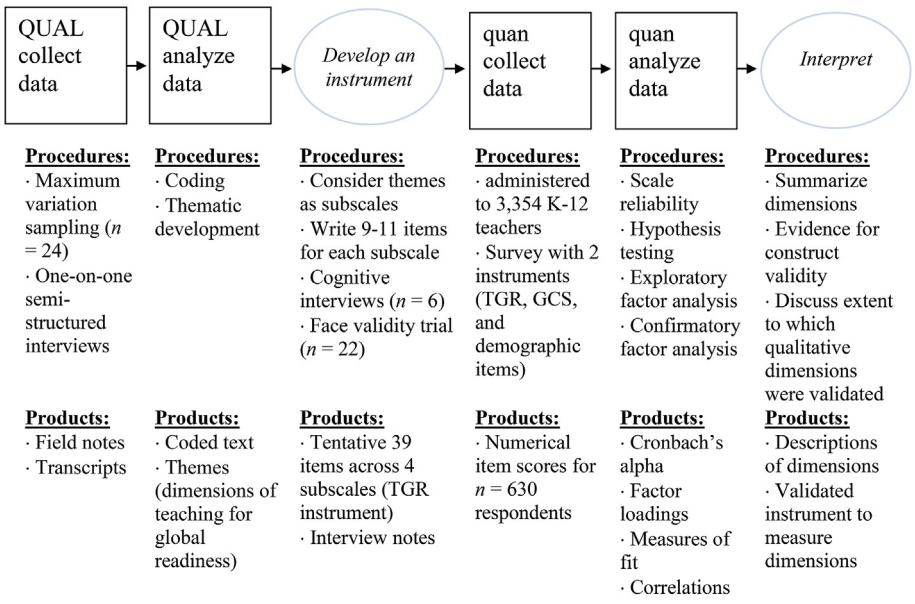

Fig. 2. Sequential exploratory mixed methods design diagram.

current K-12 classroom teachers in addition to global education researchers who are professional teacher educators were deemed as experts of the construct.

In order to garner diverse and credible perspectives, I used purposeful sampling (Creswell, 2013). The sample was purposefully selected for maximum variation in demographics to include expert teachers from the Global North, South, East, and West; multiple gender, ethnic, and racial identities; as well as a variety of grade levels and content areas. Expert teachers were recruited through *4 the World*, an international education organization that provides professional development to teachers; a state Department of Public Instruction Global Ready Designation Committee; and the New Literacies and Global Learning College of Education master's degree program at a Southeastern U.S. university that contextualized learning in a global society. Experts from these institutions had the depth of understanding and experience to provide rich information and reflect the North, South, East, and West global perspectives desired for the exploratory portion of the study. From there, I continued purposeful sampling until I reached data saturation. Participants are described in Table 1.

Data collection. Qualitative data comprised two sources: expert interview transcripts and researcher notes. One-on-one expert interviews ($N = 24$) used a researcher-generated semi-structured interview protocol of nine open-ended questions with additional probes (Creswell, 2013). Interviews began by the researcher stating, *The purpose of the study is to investigate the factors of teaching for global readiness*. Participants were asked: *What do you think students need to learn in order to be global ready?*, *How do you prepare students for a globally connected world?*, and *What do teachers need to believe or be able to do in order to prepare their students for global readiness?* Participants from outside of the U.S. were asked what they thought U.S. students should learn about their country. I audio recorded all expert interviews that were permitted by the participant ($n = 22$) and transcribed verbatim. Extensive researcher notes including en vivo quotations were taken of the two interviews not audio recorded. During and after all interviews, I took notes on participants' statements and artifacts observed in participants' classrooms, such as international maps and posters of Chinese art.

Data analysis. I employed NVivo software for qualitative data management and analysis. The verbatim interview transcripts first were analyzed using an iterative six-phase thematic analysis process (Braun & Clarke, 2006). First, I read and reread the transcripts to immerse myself in the data. Keeping the qualitative research question in the forefront, I highlighted key statements and created nodes summarizing each statement into an answer. Second, I generated categorical codes across the data. The initial codes were a priori based on the four dimensions of pedagogy of multiliteracies and the four dimensions of educational cosmopolitanism (Refer to Fig. 1 for the eight dimensions.). For key statements that did not directly align with the theoretical framework, I generated en vivo codes. Third, I compared and contrasted codes looking for patterns to become themes and gathering like data together in a matrix (Onwuegbuzie & Leech, 2007). Fourth, I reviewed the themes for internal homogeneity and external heterogeneity (Braun & Clarke, 2006). Then, I reviewed the data to make sure the themes were comprehensive of the construct based on the literature and supported by the data based on participants' contexts. Finally, I "refined and defined" the themes by constantly comparing the data to the codes and to the themes until the themes were exhaustive, internally consistent, and mutually exclusive (Braun & Clarke, 2006, p. 92). See Table 2.

The findings of the qualitative analysis comprised four overarching themes: *situated practice*, *integrated global learning*, *critical framing*, and *transactional experiences*. The four themes answer the research question: What do global education experts from around the world believe are the components of teaching for global readiness at the K-12 level? The first theme indicates that teaching is situated culturally, socially, and historically and that teachers made learning relevant to the people, time, and place of each lesson. The second theme represents how participants integrated global learning with the curriculum in ways that promoted both career and citizenship preparation. The critical frame theme signifies that participants provided instruction in critical literacy and reflexivity. The fourth theme indicates transactional experiences between multiple cultures in an equal sharing and receiving of perspectives. Teaching for global readiness includes all four themes but not necessarily at the same time. The qualitative findings were then used to develop an instrument to measure practices related to teaching for global readiness.

Validity and reliability. Mixed methods researchers often use

Table 1
Table of participants for the exploratory qualitative interviews.

Ethnoracial identity	Sex	Credentials	Current position	Grade level	Personal global experiences	Professional global experiences
Chinese	f	M.Ed.	Research assistant	9–12	Intl vacations, bilingual	Graduate study abroad, global learning course, global project collaboration
White	f	M.Ed., NBCT	Teacher	6–12	Intl vacations	PD Abroad, culturally relevant teaching course
White	f	M.Ed., NBCT	Teacher	6–8	Hosted exchange students, Intl service	Student teaching abroad, PD abroad
White	f	M.Ed., NBCT	Teacher	K-5	n/a	PD abroad, global learning course
White	f	M.A.	Teacher	9–12	Intl service	Led trips abroad for students, PD abroad
African American	f	M.Ed.	Teacher	K-12	Bn/a	Global learning course, PD abroad
White	f	M.Ed.	Teacher	6–12	Intl vacations	Global learning course, global project collaboration, intl conference
White	m	M.Ed.	Teacher	K-5, 9-12	Global experiences course	AP World history training
White	f	M.Ed.	Teacher	6–8	Intl vacations, study abroad	Global project PD, IB training
White	f	M.Ed.	Teacher	6–8	Intl vacations	IB training
White	f	M.Ed.	Teacher	K-5	Intl vacations	Courses in global learning
Hispanic	f	B.A.	Teacher	K-5	Bilingual	Work with international education NGO
Hispanic	f	B.A.	Teacher	K-5	Bilingual	Work with international education NGO
Hispanic	f	B.A.	Teacher	K-5	Bilingual	Work with international education NGO
Hispanic	m	B.A.	Teacher	K-5	Studied abroad, bilingual	Work with international education NGO
Chinese	f	M.Ed.	Teacher	K-5	Intl vacations, bilingual	Global learning course, study abroad
Chinese	f	M.Ed.	Teacher	6–8	Intl vacations, bilingual	Global learning course, study abroad
Chinese	m	M.Ed.	Teacher	K-5	Intl vacations, bilingual	Global learning course, study abroad
African American	f	M.Ed.	Admin	K-12	Intl vacations	Founded intl theme school
White	m	Ed.D.	Admin	K-12	Intl service	Taught abroad
White	f	M.Ed.	Admin	K-12	Intl vacations	Global ed administrator, intl conferences
White	f	Ph.D.	Teacher educator/ Researcher	9–12	Studied abroad	Taught abroad, researches global education & internationalization of teacher education
White	f	M.Ed., NBCT	Teacher educator/ Researcher	K-5, middle, high	Studied abroad, intl vacations, hosted exchange students, bilingual	Led study abroad
White	m	Ph.D.	Teacher educator/ Researcher	6–8	n/a	Taught global learning, led intl PD

Table 2
Themes, codes, and nodes from qualitative analysis.

Theme	Categorical code	Node
Integrated*	Whole child approach*	Considering academic, social, cultural, & personal growth
		Building cultural knowledge of students
	Overt instruction	Intentional instruction on global issues
		Setting and assessing global learning goals*
		Scaffolding global learning*
Situated practice	Hospitality	Tolerating difference
		Building relationships with students and parents
		Building partnerships with the international community*
	Situated practice	Valuing diversity
		Creating community of learners
		Facilitating student-centered learning*
	Relevant content*	Relating current events*
		Connecting with real people*
Critical framing	Critical literacy*	Supporting critical thinking
		Advancing communication skills
	Reflexivity	Promoting students' introspection
		Reflecting on own biases and assumptions
		Encouraging questioning
	Critical framing	Reducing stereotypes
Transactional experiences	Intercultural dialogue	Providing firsthand experiences*
		Designing international collaborations*
	Transactions of perspectives	Providing multiple perspectives
		Promoting equality
	Transformed practice	Supporting creative thinking
		Learning new languages*
		Traveling to new places*

Note: *en vivo coding.

the terms *validity* and *reliability* for both phases of a study (DeCuir-Gunby & Schutz, 2016). To increase validity and reliability, I followed rigorous qualitative inquiry methods throughout the duration of the study, including triangulation, member checking, and detailed reporting (Creswell & Clark, 2011). To minimize biases, peer debriefing sessions provided a form of reliability (Onwuegbuzie & Leech, 2007).

4.2. Quantitative phase

The quantitative portion of the study depended upon the findings of the qualitative portion. The following section describes the participants and the procedures for the second part of the scale development and testing process. The quantitative phase began with development of the instrument.

Instrument development. A pool of 84 potential items was written based on the qualitative data and existing instruments in the literature. Key quotes from the data became potential scale items, categorical codes became variables, and themes became subscales (Creswell & Clark, 2011).

For response format of agreement with practice, the 1–5 Likert scale *strongly disagree* to *strongly agree* was utilized because of its familiarity, which tends to reduce the cognitive burden on participants (Tourangeau, Rips, & Rasinski, 2000), and its compatibility with factor analysis (Hinkin, 1998). Statements intended to measure frequency of teacher practices were written on a 1–7 scale as *never, less than once a month, once a month, two to three times a month, once a week, two to three times a week, and daily.* The 1–7 scale tends to offer optimal statistical variance and because the items were regarding frequency, more choices tend to not increase cognitive burden (Hinkin, 1998).

Content validity. Using Morais and Ogden's (2011) content validity trial approach, the 84-item pool was sent out to education experts to judge each item for relevance and quality. Twenty-two expert reviewers participated in the trial. Only items that were consistently identified at a minimum agreement of 60% were retained.

Next, I conducted cognitive interviews to investigate the mental processes involved in reading, comprehending, and responding to the instrument directions and items. The interviews were conducted with a small sample of convenience ($N = 6$) of the target population who provided knowledgeable feedback about the topic, items, responses, and format of the instrument. Interviewees included elementary, middle, and high school teachers and covered the core subjects of English, mathematics, social studies, and science. I utilized four techniques to garner feedback while participants took the survey: observation, think-aloud, probing, and questioning (Groves et al., 2009). At the end of the survey, I conducted a debriefing session asking the interviewees to analyze coverage of the proposed model (found in Table 2).

Necessary revisions based on both the content validity trial and the cognitive interviews were made before administering the instrument to the study sample. The result was a 40-item proposed scale for teaching for global readiness with nine items for *situated practice*, eleven items for *integrated global learning*, eleven items for *critical framing*, and nine items for *transactional experiences*.

Sample. Participants for two samples were recruited through VIF International, a North Carolina based agency that provides global education training for teachers. The network was diverse demographically and geographically. They all were K-12 classroom teachers from all content areas in the U.S. with varying levels of global personal or professional experience. Both of these aspects allowed for desired levels of representativeness of the target population and variability around the factors that were needed to enhance the statistical analyses, with variability within the construct being the essential component of samples for exploratory purposes (Comrey & Lee, 1992; Hinkin, 1998).

Recruitment of participants took place in three waves: (a) personalized email announcement, (b) personalized email with unique link on Qualtrics, and (c) personalized follow-up reminder emails (Dillman, Smyth, & Christian, 2008). The respondents were entered into a lottery for a $200 gift certificate for completing the survey. The survey remained open for participants for three and a half weeks with winter break from school occurring during that time.

The survey was administered to 3354 VIF International K-12 classroom teachers with a 19% response rate. All data were determined adequate with a total sample of 630. Respondents represented a broad range of experience teaching and subjects taught. Respondents' states ranged from Hawaii to Maine, however the majority of participants were from North Carolina. Full demographics are specified in Table 3.

Data analysis. The resulting 630 participants were randomly split into two groups using the random function in Microsoft Excel ($n = 341$ and $n = 289$). All analyses and data transformations were performed with Stata IC-13 software.

The first half was assessed using exploratory factor analysis with principal axis orthogonal varimax rotation (Kim & Mueller, 1978). As the data were ordinal, polychoric correlations were run (Gaskin & Happell, 2014). The sample was assessed with the Kaiser, Meyer, and Olkin (KMO) test to determine adequacy to yield discrete and reliable factors. Both the Kaiser criterion (i.e., eigenvalues over 1.0 kept; Kaiser, 1960) and a scree test (Cattell, 1966) were used to determine the number of factors (Costello & Osborne, 2005; Gaskin & Happell, 2014; Kim & Mueller, 1978). Orthogonal rotation provided a clearer factor structure than oblique, suggesting that the factors were only moderately correlated (Costello & Osborne, 2005; Gaskin & Happell, 2014; Kim & Mueller, 1978).

Once a model was hypothesized based on EFA results, CFA was performed to confirm unidimensionality and test whether the overall model was significant (Hinkin, 1998). Goodness of fit was evaluated using Hu and Bentler's (1999) criteria for the following statistics: (a) chi-square statistic, (b) comparative fit index (CFI), (c) Tucker-Lewis index (TLI), standardized root mean square residual (SRMR), and (f) root mean square error of approximation (RMSEA). Cronbach's alpha was used to analyze the internal consistency for items within each subscale with Nunnally (1978) criterion of 0.70. The process of construct validity is ongoing and will continue with future studies (DeCuir-Gunby, 2008).

The web survey included the 40 potential items of the teaching for global readiness scale, nine item global competency subscale from the global citizenship scale (Morais & Ogden, 2011), and demographic items. The global citizenship scale was administered in conjunction with the newly developed TGR scale to test the scale for criterion-validity (Groves et al., 2009; Hinkin, 1998). Morais and Ogden reported acceptable Cronbach's alpha for each factor tested by confirmatory factor analysis (ranging from 0.69 to 0.92) and acceptable goodness of fit ($\chi^2 = 465.64$, χ^2 to df = 1.18, CFI = 0.98, NNFI = 0.98, RMSEA = 0.03, SRMR = 0.07).

5. Results

In order to define, quantify, and validate teaching for global readiness, exploratory and confirmatory factor analysis tested the relationship among 40 items from a self-report survey of teaching practices. The results of the survey specifically answer the research question: What are the factors of the teaching for global readiness construct? The survey was administered to K-12 teachers who were part of a global education professional development database. Respondents were randomly split into two groups for data analysis.

Table 3
Profile of quantitative participants.

Professional experience and demographics	Number of respondents	Percentage of respondents
Grade level taught		
K-5	370	66
6-8	111	20
9-12	80	14
Subject taught		
All	183	27
ELA/Literacy	102	15
ESL	15	2
History/Social Studies	67	10
Mathematics	71	11
Science	69	10
PE/Health	17	3
Arts	33	5
World Languages	27	4
Career and Technical	26	4
Other	20	3
Years of teaching experience		
0-4	100	18
5-9	106	19
10-14	108	19
15-19	95	17
20 or more	154	27
Highest degree attained		
Bachelors	280	50
Masters	270	48
Doctorate	11	2
Gender		
Female	474	85
Male	79	14.5
Other gender identity	2	0.5
Race		
African-American/Black	62	11
Asian	11	2
Hispanic	37	7
Native American	7	1
Pacific Islander	0	0
White/Caucasian	413	75
Multiracial	12	2
Other racial identity	12	2

This section will present the results of preliminary data analysis (including EFA results) and then report the CFA results.

5.1. Preliminary data analysis

The Kaiser–Meyer–Olkin (KMO) measure and polychoric correlations were calculated in order to judge items that may have excessively high and low correlations. The first sample of observations ($n = 341$) was assessed using KMO to test sampling adequacy of items. The KMO values indicated that the sample adequacy was "meritorious" (KMO = 0.89; Hutcheson & Sofroniou, 1999, p. 225). Next, polychoric correlations were conducted to evaluate item-item correlations of ordinal data. One item (*critical thinking*) displayed a correlation of less than 0.40 with any other item and was therefore removed to lessen the likelihood of error and increase reliability within EFA (Hinkin, 1998; Hutcheson & Sofroniou, 1999; Kim & Mueller, 1978).

5.2. Exploratory factor analysis

To determine the most adequate number of factors to extract, a scree plot (Cattell, 1966), eigenvalues, and the interpretability of the rotated solution were assessed (Kim & Mueller, 1978). Based on a visual analysis of the scree plot, four points appeared above the elbow. Five factors had eigenvalues clearly above the Kaiser criterion of >1. Both four and five factor solutions were explored. The four factor solution was clearer and fit the conceptual model better and was thus used in the EFA. A principal axis factor analysis was performed on polychoric correlations with orthogonal varimax rotation.

5.3. Retaining items

For item elimination, all items with loadings above 0.40 (Ford, MacCallum, & Tait, 1986) were considered at this point in the analysis, resulting in a 30-item teaching for global readiness scale. The retained items, as shown in Table 4, indicated good factor structure with minimal cross loadings on secondary factors. The four-factor solution explained 74% of the variance. The four factors were straightforward to interpret and "theoretically meaningful" (Hutcheson & Sofroniou, 1999, p. 244).

Overall, seven items were not retained for the scale. Five items loaded on multiple factors. Two items did not load at acceptable values on any factor (i.e., *C.2.* and *T.6.*). Two items (i.e., *I.7.* and *I.10.*) loaded but did not conceptually align with the other items in that factor.

5.4. Confirmatory factor analysis results

Confirmatory factor analysis (CFA) began with the hypothesized measurement model from EFA. CFA using maximum likelihood estimation was conducted with the second group of the original 630 cases ($n = 289$) to test the factor structure of the 30 retained items from exploratory results. The four-factor model assumes that

Table 4
Factor loadings from exploratory analysis.

#	Measured	Factor 1	Factor 2	Factor 3	Factor 4	Retained
C.7.	I ask students to engage in discussions about international current events.	0.79				
C.5.	I ask students to analyze the reliability of a source.	0.80				
C.6.	I ask students to analyze content from multiple perspectives.	0.77				
C.8.	I ask students to construct claims based on primary sources.	0.73				
I.6.	I ask students to read/view international sources (e.g. BBC, Al Jazeera).	0.61				
C.11.	I teach my students to analyze the agenda behind media messages.	0.56				
I.3.	I keep informed on global issues.	0.51				
I.9.	I am informed through international sources.	0.45				
S.4.	I cultivate a classroom environment that values diversity.		0.84			
S.7.	I cultivate a classroom environment that promotes equality.		0.83			
S.9.	I provide a space that allows students a voice.		0.81			
C.9.	I guide students to examine other possible perspectives.		0.67			
S.6.	I provide a space that allows learners to take risks.		0.66			
S.5.	I take inventory of the cultures (languages, countries, etc.) represented by my students.		0.57			
S.8.	I attempt to break down students' stereotypes.		0.55			
I.10.	I display artifacts (e.g., maps, posters, souvenirs) from other countries in my classroom.		0.44			
I.2.	I integrated global learning with the curriculum.			0.56		
S.1.	I use class materials based on real world issues.			0.56		
I.1.	I plan to use texts written by authors from diverse countries			0.56		
T.3.	I teach cross-cultural communication skills.			0.54		
I.5.	I assess students' global learning.			0.52		
I.8.	I build a repertoire of resources related to global education.			0.51		
S.3.	I adapt my teaching methods to meet the needs of a culturally diverse student group.			0.50		
I.11.	I facilitate conversation about connections between my students and other countries.			0.49		
C.1.	I use inquiry-based lessons about the world (e.g., research projects, exploratory learning, discovery learning).			0.41		
T.8	I ask students to utilize synchronous technology (e.g., Skype, GoogleHangout) for international collaborations.				0.87	
T.9.	I ask students to utilize asynchronous technology (e.g., email, blogs) for international collaboration.				0.80	
T.7.	I ask students to utilize technology (e.g., Skype, email) for virtual interviews (with experts, community members, etc.).				0.78	
T.2.	I facilitate conversations between my students and students in other countries.				0.52	
T.5.	I take students on field trips to international places within the community (e.g., mosque, Asian market, Japanese garden).				0.50	
T.4.	I bring in speakers from different backgrounds so that students can listen to different perspectives.				0.44	
I.7.	I ask students to conduct standards-aligned investigations of the world.				0.45	
S.2.	I differentiate instruction to meet the needs of diverse learners.		0.53	0.63		
T.1.	I design international collaboration projects for my students.			0.53	0.40	
I.4.	I integrate intl current events with the curriculum	0.55		0.45		
C.9.	I guide students to examine their cultural identity.		0.51	0.41		
C.4.	I provide students with more than two perspectives on global issues.	0.50		0.52		
T.6.	I ask students to share their culture with other students.					
C.2.	I reflect on my own bias and assumptions					

Note: Blanks represent <0.40.

the measurement variables were driven by four latent factors: (a) critical literacy, (b) situated practice, (c) integrated global learning, and (d) transactional experience, based on the results from the EFA.

5.5. Model fit

The proposed four-factor model originally revealed a marginal fit to the data (χ^2 (203) 711.071, $p < .000$, CFI = 0.834, TLI = 0.812, SRMR = 0.096, RMSEA = 0.092). The first step in efforts to improve fit is to look for items that carry the most error. Six items were eliminated due to high standardized residuals (>1.96; Brown & Moore, 2015), as indicated in bold in Table 5 (i.e., I.6., I.3., I.1., T.3., I.11, and T.2.). Next, three items were eliminated due to factor loadings below 0.45 (Comrey & Lee, 1992); i.e., I.3, I.9, and S.3.). Modification indices above 20 (Norwegian Social Science Data Services, 2013) were then evaluated. Specification of correlated measurement error was added to three pairs of measured variables (i.e., C.5. and C.6., S.4. and S.7., S.6. and S.9.) based on statistics and method effects, as the items contained similar wording (Brown & Moore, 2015). CFI was still not above 0.95, so factor loadings below 0.55 were examined. Two items were removed (S.1. and T.5). Item T.4. loaded at the fair level (0.53) but was kept because of conceptual importance to the scale and little difference observed in the model fit. One item (C.9.) was removed based on high modification indices and redundancy in the subscale.

Removing these items did not compromise the integrity of the scale conceptually and improved the model fit (Comrey & Lee, 1992). Overall, the revised model fit well with excellent CFI, TLI, RMSEA, and SRMR values (χ^2 (143) 246.909, χ^2/df = 1.73, CFI = 0.960, TLI = 0.953, SRMR = 0.061, RMSEA = 0.051). See Table 6. A χ^2 difference test was conducted and $\Delta\ \chi^2$ significant at $p < .001$.

The retained measurement model is presented in Fig. 3. The analysis resulted in 19 measured variables on four latent variables. The measurement model consisted of five measured variables for latent variable *critical*, six measured variables for latent variable *situated*, four measured variables for latent variable *transactional*, and four measured variables for latent variable *integrated*. The scale consisted of 4–6 items per factor, balancing statistical strength with parsimony (Costello & Osborne, 2005).

5.6. Convergent test of validity

The TGR scale and GSC were administered concurrently. Correlation was computed for participants' score on the TGR scale and GSC global competence subscale ($r = 0.5456$), indicating a positive moderate relationship. Regressing GCS on TGR resulted in a positive relationship ($\beta = 0.6160$, F (1, 327) = 138.60, $p < .001$, $r^2 = 0.2977$).

Table 5
Item-to-factor statistics from confirmatory factor analysis.

#	Measurement	Factor loading	Standard error	Residual	R^2	MI > 20	Removed
I.6.	**readintlso ~ s**	**0.54**	0.05	**2.17**	0.29		•
C.7.	discussint ~ s	0.70	0.03	1.74	0.49		
C.5.	reliabilit ~ e	0.83	0.02	1.21	0.69		
C.6.	analyzemul ~ v	0.90	0.02	0.75	0.80		
C.8.	primarysou ~ s	0.84	0.02	1.12	0.71		
C.11.	analyzeage~a	0.61	0.04	0.75	0.37		
I.3.	**keepinformed**	**0.46**	0.05	**2.29**	0.21		•
I.9.	**iaminforme ~ s**	**0.44**	0.05	0.68	0.19	•	•
S.4.	valuesdive ~ y	0.80	0.03	0.14	0.64		
S.7.	promoteseq ~ y	0.80	0.03	0.12	0.64		•
S.5.	inventoryo ~ s	0.71	0.03	0.27	0.51		
C.9.	**examineoth ~ s**	0.71	0.03	0.25	0.50	•	•
S.6.	risk	0.69	0.04	0.22	0.47		
S.9.	voice	0.73	0.03	0.16	0.54		
S.8.	breakdowns ~ s	0.61	0.04	0.30	0.37		
I.2.	integrateg ~ m	0.72	0.04	1.05	0.51		
S.1.	**realworldm ~ s**	**0.50**	0.05	1.50	0.25		•
I.1.	**authorsdiv ~ s**	0.58	0.04	**2.02**	0.34		•
T.3.	**crosscultu ~ m**	0.60	0.04	**2.59**	0.36		•
I.5.	assessgl	0.70	0.04	1.48	0.49		
I.8.	repertoire ~ s	0.66	0.04	0.50	0.43		
S.3.	**adaptteach ~ g**	**0.28**	0.06	0.81	0.08		•
I.11.	**convosconn ~ s**	**0.51**	0.05	**2.78**	0.26		•
C.1.	pbi	0.65	0.04	1.69	0.42		
T.8.	synchtech	0.85	0.03	0.46	0.72		
T.9.	asynchtech	0.71	0.04	0.82	0.51		
T.2.	**convosstud ~ s**	**0.42**	0.05	**2.76**	0.18		•
T.4.	bringspeak ~ s	**0.53**	0.05	0.64	0.28		
T.5.	**intlfieldt ~ s**	**0.49**	0.05	0.30	0.24		•
T.7.	virtualint ~ s	0.76	0.03	1.30	0.58		

Table 6
Goodness of fit statistics for measurement model.

Fit statistic	value
Likelihood ratio	
chi^2_ms	(143) 246.91
$p > chi^2$	0.000
chi2_bs	(171) 2787.28
$p > chi^2$	0.000
Population error	
Root mean squared error of approximation	0.05
90% CI, lower bound	0.04
upper bound	0.06
*p*close	0.43
Information criteria	
Akaike's information criterion	14066.47
Bayesian information criterion	14306.36
Baseline comparison	
Comparative fit index	0.96
Tucker-Lewis index	0.95
Size of residuals	
Standardized root mean squared residual	0.06
Coefficient of determination	0.99

Possessing global competency is associated with on average a 0.62 point increase on the teaching for global readiness scale. These relationships indicate convergent validity of the teaching for global readiness scale (Hinkin, 1998).

5.7. Internal consistency

Internal consistency and reliability analysis was then conducted on the four factors. Reliability was estimated using Cronbach's α and the results were considered acceptable:

- factor 1 (CRITICAL - > C.5. C.6. C.7. C.8. and C.11.) coefficient at 0.88
- factor 2 (SITUATED - > S.4. S.5. S.6. S.7. S.8. and S.9.) coefficient at 0.85
- factor 3 (INTEGRATED - > I.2. I.5. I.12. and C.2.) coefficient at 0.75
- factor 4 (TRANSACTIONAL - > T.4. T.7. T.8. and T.9.) coefficient at 0.79

The overall reliability of 0.88 is considered an appropriate level (Comrey & Lee, 1992; Nunnally, 1978).

5.8. Response rate

A possible concern with the data is the 19% response rate, which may introduce error into the data. To address the concern of low response rate, a histogram of response dates was generated. Visual analysis of the histogram showed one tall peak in December and two shorter peaks in January. The sample was then divided into two groups: (a) December dates to represent early respondents, and (b) January dates to represent late respondents. T-tests were performed on the strongest variables (i.e., promote equality, analyze multiple points of view, integrate global learning, and utilize synch tech) in each factor by response groups. The differences of means between early and late responders were not different from zero, suggesting no significant differences in variances across groups. Based on survey method research, late respondents tend to answer similarly to non-respondents (Radhakrishna & Doamekpor, 2008) suggesting that the low response rate is not problematic to the study.

5.9. Summary of results

The primary interest of this study was to operationalize and validate the construct of teaching for global readiness as a scale of teacher practices. Through exploratory methods on split-half data ($n = 630$), four distinct factors were interpreted: critical literacy,

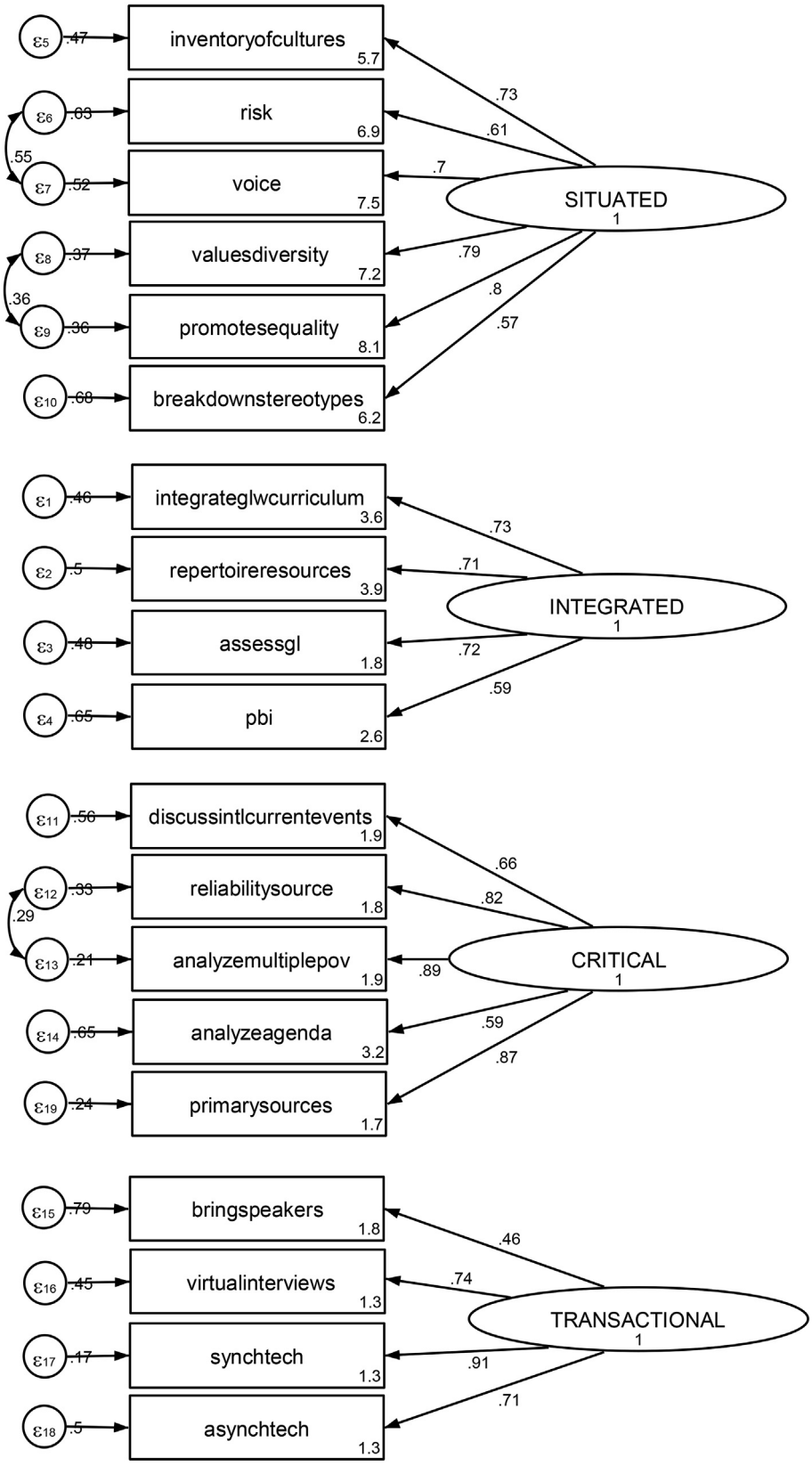

Fig. 3. Standardized factor loading for the four-factor CFA.

situated practice, integrated global learning, and transactional experience. To test the factor structure, the second group of the randomly split data was analyzed with maximum likelihood CFA. The study resulted in 19 items on four factors (CRITICAL - > C.5. C.6.

C.7. and C.8.); (SITUATED - > S.4. S.5. S.6. S.7. S.8. and S.9.); (INTEGRATED - > I.2. I.5. I.12. and C.1.); (TRANSACTIONAL - > T.4. T.7. T.8. and T.9.). Cronbach's alpha and goodness of fit criteria demonstrated desirable validity and reliability. The result is an empirical model (shown in Table 7) and a self-report instrument to measure teachers' practices related to the construct teaching for global readiness.

6. Discussion

The purpose of the study was two-fold. The primary purpose was to validate the construct.

Of teaching for global readiness. The secondary purpose was to develop a scale that collected data on teaching practices that promote students' global readiness. The aim of this section is: (a) to synthesize the qualitative and quantitative findings, (b) to relate the findings to the extant research on global readiness, and (c) to consider the implications of this study for policy, practice, and future research.

6.1. Synthesis of qualitative and quantitative findings

The four-factor solution was interpreted as the first factor representing *situated practice*, the second as *integrated global learning*, the third as *critical literacy*, and the fourth as *transactional experience*. All four themes about teaching for global readiness from the qualitative findings were generalizable to a large sample of K-12 teachers in the U.S. Critical literacy and situated practice directly align with pedagogy of multiliteracies theory (New London Group, 1996) and transactional experience directly aligns with educational cosmopolitanism (Wahlström, 2014). Of the eight categorical codes, seven loaded on the scale. Reflexivity did not load. Cognitive interviews provided a possible insight into this result as participants from the target population stated that while they knew they should be reflexive, they did not feel they had the time to practice nor teach reflexivity. Fig. 4 provides an illustration of how the scale items map onto the four factors.

6.2. Relationship to extant research

The first factor is *situated practice*. Situated practice, as introduced by the New London Group (1996), is concerned with the context of the people, place, and time of learning. Situated practice means that learning is contextual and teaching should be relevant, authentic, and social. This pedagogy makes learning relevant by considering the community, both in the classroom and the larger society within which the learning is taking place. Teachers accomplish this by building relationships with students and their families. Teachers cultivate a community of equality by ensuring that students have a voice, feel safe to take risks, and part from stereotypical notions of others (Parkhouse, Glazier, Tichnor-Wagner, & Montana Cain, 2015). In situated practice, teachers are aware of and value students' diverse cultural experiences (Kim & Slapac, 2015; Mills, 2006). Situated practice is a democratic pedagogy and a sociocultural pedagogy that is relevant and responsive to the students as social and cultural beings.

The second factor is *integrated global learning*. Rather than thinking of global education as an add-on or a replacement, teachers demonstrate how the local is already global (Appiah, 2006; North Carolina State Board of Education, 2013). From a cosmopolitan view, communities around the world are seen as interconnected and interrelated. As Rizvi (2008) explains, "This does not mean ignoring local issues, but to understand them within the broader context of the global shifts that are reshaping the very nature of localities" (p. 21). To support integrated global learning, teachers gather a variety of global readiness materials and resources that relate to their students, current events, and course of study. Teachers incorporate global learning with existing structures to teach global readiness skills and dispositions, such as inquiry-based learning grounded in the curriculum and applied to the world. This factor corroborates the Globally Competent Teaching Continuum criteria "integrate learning experiences for students that promote content-aligned explorations of the world" (Learn, 2014, n.p.). Integrated global learning provides overt instruction (New London Group, 1996) on global issues and concepts. Teachers address intercultural communication, such as explicit discussions

Table 7
Teaching for global readiness scale statistics.

Item	Factor loading	Item-test correlation	Subscale reliability
Critical			0.88
C.5. I ask students to analyze the reliability of a source.	0.83	0.73	
C.6. I ask students to analyze content from multiple perspectives.	0.90	0.79	
C.7. I ask students to engage in discussions about international current events.	0.70	0.71	
C.8. I ask students to construct claims based on primary sources.	0.84	0.76	
C.11. I ask students to analyze the agenda behind media messages.	0.90	0.57	
Situated			0.85
S.4. I cultivate a classroom environment that values diversity.	0.80	0.43	
S.5. I take inventory of the cultures (languages, countries, etc.) represented by my students.	0.72	0.45	
S.6. I provide a space that allows learners to take risks.	0.69	0.40	
S.7. I cultivate a classroom environment that promotes equality.	0.80	0.35	
S.8. I attempt to break down students' stereotypes.	0.61	0.50	
S.9. I provide a space that allows students a voice.	0.73	0.39	
Integrated			0.75
I.2. I integrate global learning with the existing curriculum.	0.72	0.54	
I.5. I assess students' global learning.	0.70	0.67	
I.12. I build a repertoire of resources related to global education.	0.66	0.60	
C.1. I use inquiry-based lessons about the world (e.g., research projects, exploratory learning, discovery learning).	0.65	0.61	
Transactional			0.77
T.4. I bring in speakers from different backgrounds so that students can listen to different perspectives.	0.53	0.48	
T.7. I ask students to utilize technology for virtual interviews (with experts, community members, etc.).	0.76	0.57	
T.8. I ask students to utilize synchronous technology (e.g., Skype, Google Hangout) for international collaborations.	0.85	0.56	
T.9. I ask students to utilize asynchronous technology (e.g., email, blogs) for international collaborations.	0.71	0.53	

Note. χ^2 (143) 246.91, χ^2/df = 1.73, CFI = 0.96, TLI = 0.95, SRMR = 0.06, RMSEA = 0.05, α = 0.88.

Fig. 4. Teaching for global readiness four dimensions and corresponding items.

about what is considered sensitive in different cultures and multimodal communication strategies. Teachers across grade levels and across the curriculum intentionally set and systematically assess global learning.

The third factor is *critical literacy*. Critical literacy, borrowing the words from Paulo Freire, asks students to read and write the world (McLaughlin & DeVoogd, 2004). Educators who promote critical literacy teach students to think critically and to inquire using critical literacy (Cope & Kalantzis, 2015; Hull et al., 2010). Teachers provide texts about past and current international events from multiple perspectives. Students develop the capacity to question the authority of the source of information, analyze the authors' purposes, and locate primary sources. Students develop the tools to question, protest, negotiate, connect, and advocate in service of tearing down systems of inequality and designing new futures (New London Group, 1996).

Fourth, transactional experience involves transactions of perspective through hospitable reading, writing, listening, speaking, and inquiry experiences—face-to-face or virtually—with diverse others (Wahlström, 2014). As students engage in intercultural dialogue, they can learn from sharing each other's perspectives (Hull et al., 2010; Parkhouse et al., 2015). Intercultural dialogue allows students firsthand experiences with different cultures. Firsthand experiences are essential for student development of intercultural competency (Mahon & Cushner, 2014). In these firsthand learning experiences, students interact with others in an exchange of information and ideas in a way that requires receptive language (e.g., listening and reading) as well as expressive language (e.g., speaking and writing) so that there is give and take from both parties. Teachers build partnerships in the community and globally to open a space for intercultural dialogue and for international collaborations. Teachers utilize technology to connect their students with people from all over the world and to facilitate international collaborations.

Since the turn of the century, international education researchers have investigated the impact of global change on education and found that education has not kept pace with the speed of change in global workplaces and humanitarian needs. Researchers have called for better alignment between the 21st century skills needed for college, career, and citizenship readiness in a global, knowledge society. Most notably, the findings of this study corroborate findings from research advocating for more teaching in the 21st century centered on soft skills. Walsh (2016) advocates for education to address the development of students' soft skills, such as adaptability, flexibility, and resilience. Adaptability and flexibility are also components of the highly researched intercultural development model showing great promise that these soft skills may lead to greater intercultural understanding (Hammer, Bennett, & Wiseman, 2003). Casinader (2016) highlights the need for cultural understanding as part of 21st century skills. Casinader challenges educators to look beyond intercultural competence to transcultural modes of knowledge and communication, calling for schooling to promote students' transcultural identities and the ability to fluidly move amongst cultures, corroborating the need for the transactional experience dimension of the TGR scale while pushing the field for more of an emphasis on transculturalism rather than interculturalism, as named in the scale. Skerrett (2015) called for teaching transnational curricula that promote multiliteracies, cultural flexibility, and global understanding. This study supports research on 21st century skills that add transcultural skills and dispositions and transnational curricula as essential for education today.

6.3. Implications for research, policy, and practice

In this section, the limitations and the implications of this study

for future research, education policy, and classroom practice are considered. Overall, the results of this study suggest instructional practices from a U.S. cultural perspective that teachers can adopt to promote students' global readiness and offer the validated teaching for global readiness (TGR) scale for future research.

Limitations and Implications for Research. Internal and external validity are always a concern in scale development. Specific threats to internal and external validity of this study lead to limitations when interpreting the results. One threat to internal validity is the fact that the TGR scale is a self-report survey. Self-report assumes that respondents are willing to answer truthfully and able to answer accurately (Groves et al., 2009). Truthful responses are more likely if the scale is not being used for teacher evaluation. Another possible concern is that the sample was not a random sample of U.S. K-12 teachers. The purpose of the factor analysis was not to generalize to the population at-large nor to compare populations but instead to validate a construct, so random sampling was not necessary (Comrey & Lee, 1992). The sample frame was chosen because variance around factors is the most important criterion needed for exploratory analysis (Comrey & Lee, 1992). Nevertheless, a delimitation of the study is that the results cannot be used to generalize the current status of K-12 teacher practices in the U.S. Future research using random samples are needed to continue to refine the scale by showing continued generalizability of the four factors and to allow for generalizability of the frequency of current practices and to make group-to-group comparisons; of particular interest is comparison between grade levels, subject areas, study abroad experience, and teacher demographics.

In addition, a challenge of this study was testing for convergent validity. At the time of the study, there was a dearth of research providing valid and reliable instruments on teaching practices related to global education. There were no observational measures for participants' principals or peers to complete for concurrent validity testing of the self-report scale. Future research could create observation protocols to measure teaching for global readiness practices. In addition to observation protocols, this study could be used to create tools for practitioners. Researchers also can utilize the scale to help describe and evaluate professional development and classroom practices for global readiness.

Future research directions include continued validity testing and hypothesis testing. Replicability of the four factors when using random sampling will ensure that the factors are not sample specific. The relationship of the TGR scale to the Cross Cultural Adaptability Inventory (CCAI; Kelley & Meyers, 1992) and the Intercultural Development Inventory (IDI; Hammer et al., 2003) can be tested for continued external validity testing and also to assess how internationalizing preservice teacher education translates to classroom practice. Research has shown that teachers who believe that global education is important may not be teaching global education (Rapoport, 2010). The relationship of the TGR scale and the Teacher Efficacy Scale (Gibson & Dembo, 1984) and Teacher Locus of Control Scale (Hall, Smitley, Villeme & Schwartz, 1980) could illuminate why teachers who believe in global education may not be practicing global ready teaching. To examine teaching for global readiness at the state level, the scale can be administered and analyzed in order to generalize the existing condition of teaching for global readiness practices in states that have adopted global readiness as a goal for all students.

Implications for Policy. In an age of high stakes testing focused on literacy and mathematics, global education may not receive priority (Noddings, 2005). The state of North Carolina has made global education a priority. This study was timely because currently the North Carolina professional standards for teachers include teaching for global readiness as part of teacher evaluations (North Carolina State Board of Education, 2013). North Carolina is also among the first states to initiate a Global Ready School designation program and the first state to issue Global Ready badges for teachers. These global ready badges commenced in January 2015 and are microcredentials intended to demonstrate a teacher's new literacies and global competences. North Carolina, as well as other states that follow suit, can potentially utilize the TGR scale as part of microcredential or school-designation programs. The scale could be utilized for awareness building, planning purposes, and assessment of growth over time. While this study focused on individual teacher practices, qualitative data indicated that teachers felt global education was not currently part of the standard course of study and that is why teachers perceived they integrated global learning with the existing curriculum. Future research could address incorporating global readiness skills, knowledge, and dispositions in the standard curriculum for K-12.

Implications for Practice. A potential outcome of this study is a theoretically grounded definition and common language around the construct. Dependent on results of future reliability and validity testing, the TGR scale offers a free and accessible tool that has the potential to contribute to teachers' practices. The results point to the importance of being locally situated but globally connected, in other words, the importance of cultivating a community of learners inside the classroom and facilitating experiences where students interact with diverse others outside the classroom (face-to-face or virtually). Teachers may be able to use the data collected on the TGR scale to self-assess strong and weak dimensions, to set professional development goals, to garner appropriate professional development, to show growth on professional standards, and as part of the process to earn global ready teacher badges. In addition, data can be examined for planning and formative evaluation of global education professional development at the school level. The TGR scale can be used for school-wide assessment and as part of global education training evaluations. Principals can administer the scale to the staff as a needs assessment or before and after staff development as one measure of program effectiveness.

At the higher education level, the scale can be employed to inform teacher education. The TGR scale collects data on teaching critical literacy skills and dispositions, situating practice for the people and place of instruction, integrating global learning with the curriculum, and utilizing community and technology resources to provide students with transactional learning experiences. At the undergraduate level, the TGR scale holds the potential to bring awareness to pre-service teachers as to practices that can promote students' global readiness. Teacher educators with in-service teachers can use the data to gauge where teachers need the most support and design instruction accordingly.

7. Conclusion

The goal for the teaching for global readiness scale was to target the key instructional practices that help prepare students for a globally interconnected world. The inductive approach to target these practices was theory-driven and data-driven and utilized the strengths of both qualitative and quantitative methods. Now that the scale is developed, it can contribute to the field in several ways. The study can inform education researchers, state and district policy-makers, and school administrators. Furthermore, the study can inform teachers on practices that promote global readiness, hopefully leading to global readiness for all students.

This project addressed the need for the teaching for global readiness scale, shared related research, described the development of the instrument, evaluated the validity and reliability of the instrument, and considered the prospective contribution of the teaching for global readiness scale. This study is significant as global

readiness is an increasing concern, not only in the U.S. but internationally as well. The results contribute to emerging literature by providing an array of teacher practices that promote global learning, critical literacy, and cosmopolitan dispositions. Future research should continue to investigate instruction as well as student outcomes associated with teaching for global readiness.

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