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Designing Instruction to develop Cultural Intelligence (CQ): Reporting on Blended Learning Outcomes at a Japanese University

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As part of a broader project concerned with an application of instructional design (ID) to cultivate cultural intelligence (CQ), this study reports on the intercultural learning outcomes of a group of Japanese undergraduates. Utilizing the project's previously constructed framework in a blended learning environment, the course involved students in a face-to-face environment that included a culturally diverse online exchange, topical lectures, classroom activities and various forms of media. Course engagement and learning feedback were tracked through a series of synchronous online surveys. Pre- and post-course individual and group measures of CQ were obtained online through the Cultural Intelligence Center. Results show significant advances in CQ for the majority of participants when measured against worldwide norms. Findings are discussed with reference to designing instruction for intercultural learning and with a consideration towards the implications for the larger project and the development of learning in this area.

Keywords: blended learning, cultural intelligence (CQ), experiential learning, instructional design, Japanese universities

The increasing reach and utilization of online learning continue to influence organizations globally. Computers and the adjacent developments in 'smart' technologies are increasingly providing new means for personalizing learning, assisting in the design of learning through an exacting assessment of learner needs and knowledge, as well as in the measurement and capture the learning process and its outcomes. In many ways, technology is succeeding as a formidable partner in education. Increasingly however, there appears to be an ever-widening divide between the profusion of technological features on offer and a shortage or non-existence of teaching principles, and/or methodologies to accompany or support it (Alonso, López, Manrique & Viñes, 2005). This trend raises a radical challenge for educational establishments and further forefronts the central role of instructional design, given its concern with how to meaningfully incorporate technological advances in established educational paradigms, pedagogies and learning traditions.

The globalization of education has further led to the proliferation of online learning, connecting very different cultures and learning traditions and resulting in an increasing diversity in online learning groups. It therefore seems vital that educationists should consider not only the cultural sensitivity and appropriateness of educational methods and pedagogies, but also the intercultural competence of course participants that engage in online environments (Parrish & Linder-Vanberschot, 2010; Rogers, Graham & Mayes, 2007; Clem, 2004). The current project (Roux, Suzuki, Matsuba, & Goda, 2018) brings together a number of these overlapping issues through a focus on training and structured learning as necessary components in developing intercultural skill, with specific consideration towards utilizing online technologies to enable the development of cultural intelligence (CQ).

Cross-cultural competence, knowledge and skills are today recognized as a vital ingredient for the skill-set of a global citizen (Fischer, 2011; Roux, 2018). Universities have long been expected to prepare graduates for future careers but the notion that the diversity of learning environments (physical or virtual) can be exploited to support the skill development of students seems to have been slow in gaining traction, partially perhaps due to the lack of an integrated

underlying pedagogical approach, as Fischer (2011) points out. There are some positive indications to the contrary however. Embarking on a new educational initiative in 2011, the Japanese government (MEXT, 2018) has set a series of requirements for universities to emphasize an education that would result in more 'internationally minded' graduates. This vision appears to consider the fact that graduates are increasingly likely to work in diverse environments, regardless of whether these will be based in local or global contexts, as pointed out by some authors (Livermore, 2011; Fischer, 2011).

The expanding need for continued and deeper understandings of cultural diversity in recent years saw the notion of CQ come to the fore. This concept is defined as 'an individual's capability to function effectively in culturally diverse settings' (Ang, Dyne & Tan, 2011). Research in this area has grown exponentially in recent years, and the concept of CQ, through its focus on the personal capacities that would bridge cultural differences, has assisted in the integration of the somewhat fragmented field of intercultural studies (Ang, Van Dyne & Rockstuhl, 2012). According to the Cultural Intelligence Center, four CQ capabilities characterize the intercultural capacity of a person: (1) *CQ drive*, which relates to a person's motivation, interest and confidence in settings with cultural diversity; (2) *CQ knowledge*, which refers to knowledge about how cultures are similar or different; (3) *CQ strategy*, which is how a person makes sense of culturally diverse experiences and social situations; and, (4) *CQ action*, which signifies a person's capability to adapt their verbal and non-verbal cultural behavior to appropriately suit a particular context. CQ is thus similar to, yet distinct from, IQ (general mental ability) and EQ (emotional intelligence) in that it measures a set of capabilities necessary for personal and professional success that focuses on multicultural contexts. CQ has been demonstrated to predict adjustment, well-being, cultural judgment and decision-making, as well as task performance in culturally diverse settings (Ang et. al., 2012). Studies have further shown that CQ retains predictive validity over and above demographic characteristics, personality, general mental ability, emotional intelligence, cross-cultural adaptability inventory, rhetorical sensitivity, cross-cultural experience, and social desirability (Ang et. al., 2012). The notion of CQ as an encapsulating construct for intercultural training and development is therefore very appealing, since it offers a broad yet practically useful and robust understanding that focuses primarily on the skills and capabilities needed to be successful in situations characterized by cultural diversity, whether these are international or domestic contexts.

These trends and developments suggest that instructional designers need to remain aware of culture's pervasive presence in the learning process, take seriously some of the reported neglect in consideration of the cultural influences in e-learning (Henderson, 2007; Parrish & Linder-Vanberschot, 2010) and take care to actively incorporate a cultural awareness as part of their approach to curricular design and instruction (Clem, 2004; Thomas, Mitchell & Joseph, 2002). Earlier reports (Roux & Suzuki, 2016; Roux, Suzuki, Matsuba & Goda, 2017; 2018) drew attention to these aforementioned observances which informed initial points of departure for our project. Preliminary project work focused on the development of a multi-disciplinary conceptual framework (Roux & Suzuki, 2017) which anchored an intercultural training workshop to encourage the development of cultural intelligence (CQ) in Japanese undergraduates. This framework utilized instructional design (ID) theory and further incorporated CQ theory (Early & Ang, 2003; Ang, Van Dyne & Tan, 2011) and experiential learning theory (Kolb, 1984). Findings from this initial step indicated a successful integration of theoretical departure points and the incorporation of experiential learning to develop CQ, providing a basis for expansion of our project (Roux & Suzuki, 2017; Roux et. al., 2018).

Subsequent project expansion focused on the application of our model to the development of a semester-long blended-learning course (Roux et. al., 2018), mindful of Fischer's (2011) contention that intercultural learning requires a pedagogy that can support the growth of CQ. Blended learning refers to methods of learning that mixes various event- or experience-based activities and may include live e-learning (synchronous), self-paced learning (asynchronous) and face-to-face classrooms (Alonso et. al., 2005; Watson, 2008). The course continued for two semesters with two separate student groups, successfully integrating our framework with the blended learning model (Roux et. al., 2018). The project further extended a theoretical reach (Roux, 2018), toward including the notion of a 'global mindset', a term which has become popular in Japanese higher education to signify some of the stated goals in the internationalization of Japanese tertiary institutions. The concepts of CQ and a global mindset are conceptually similar in that a person with higher CQ are more likely to develop a global mindset, as is suggested by Lovvorn & Chen (2011).

Notable developments achieved thus far through the incorporation of the blended model in our project included the expansion of intercultural learning through online media, reflective learning captured through online means, a cross-cultural asynchronous virtual exchange and the development of online tools for summative and/or formative assessment and reflection (Roux et. al., 2018; Roux 2018). Although indicators for the development of CQ (using a paper version of the original CQ survey) (Van Dyne, Ang, Ng, & Koh, 2008) were statistically not significant as measured in the first semester of the course, other measures taken at the time (formative, summative assessment and course feedback) indicated effective intercultural learning (Roux et. al., 2018). A qualitative analysis that further explored learners' self-reports and reflections indicated increased confidence in areas related to intercultural skill

development, critical thinking and digital literacy (Roux et. al. 2019). In the second iteration of the course, we utilized the online version of the CQS, as provided through the online service of the *Cultural Intelligence Center* (www.culturalQ.com) and achieved a different set of results, which is presented here as the primary focus. These results show developments in the self-reported CQ scores of participants when compared to worldwide norms, providing additional support for the efficacy of our framework, course design and instructional methods. For the current purpose, we present an analysis and discussion of these findings and consider the implications for the design of instruction that seeks to promote the development of CQ in tertiary contexts.

Research design, Methods and Procedures

The current project continues to draw on a framework that uses an interdisciplinary approach to synthesise well-known instructional design (ID) models (Keller's ARCS model, 2000; ADDIE model, see Molenda, 2003) with Experiential Learning Theory (Kolb, 1984) and intercultural theory, as represented through use of the construct of cultural intelligence (CQ) (Ang et. al., 2011). Earlier results and findings suggested a successful integration in a framework with a design sequence that supported intercultural learning (Roux & Suzuki, 2016, Roux et. al., 2017, 2018). To investigate the development of CQ, we designed and implemented a 15-week intercultural communication course that combined: 1) traditional educational methods in a face-to-face classroom environment; 2) experiential learning activities in a facilitated format; 3) one multi-cultural workshop; 4) online media, quizzes and feedback formats (summative and formative) to enhance and understand the intercultural learning processes; and 5) an asynchronous online discussion forum with international counterparts. We measured CQ pre- and post-course using an online form of the CQ survey (E-CQS), provided independently through the Cultural Intelligence Centre. Figure 1 (Roux et. al., 2018) highlights the blended learning approach we followed to develop and trace CQ.

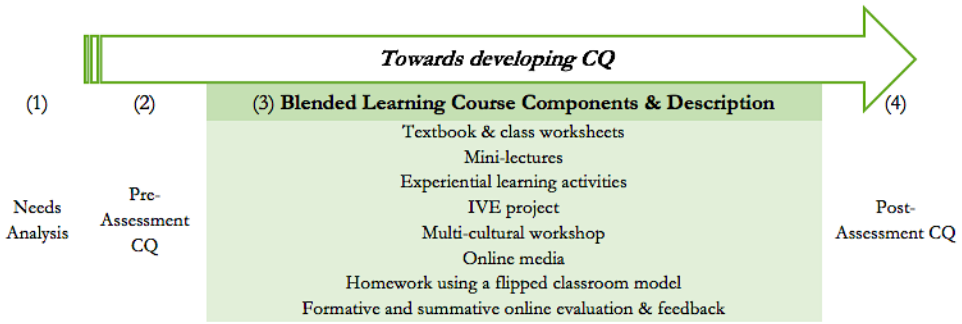


Figure 1. Outline of the research investigation (Roux et. al., 2018)

The second iteration of the investigation included 19 undergraduate (2nd and 3rd year) students who participated in a 15-week intercultural learning course. This course is typically enrolled in by students who are interested in short- and/or long-term study abroad and are purposefully selected to join a program geared toward this end (Roux & Angove, 2017). An audience analysis done at the inception of the project indicated that students in this program are typically highly motivated learners, are predominantly Asian (mostly Japanese) and are intermediate- to advanced-level English second-language learners (Roux & Suzuki, 2017). The gender balance for the current investigation was 63% female, 37% male and except for one Taiwanese student, all students were Japanese. The majority of the group (64%) reported limited to moderate prior intercultural experience. The class met weekly for a 90-minute, F2F class in a PC lab with Wi-Fi and audio-visual equipment. An outline of the course is reproduced below (see Roux et. al., 2017).

Table 1
Course outline and description

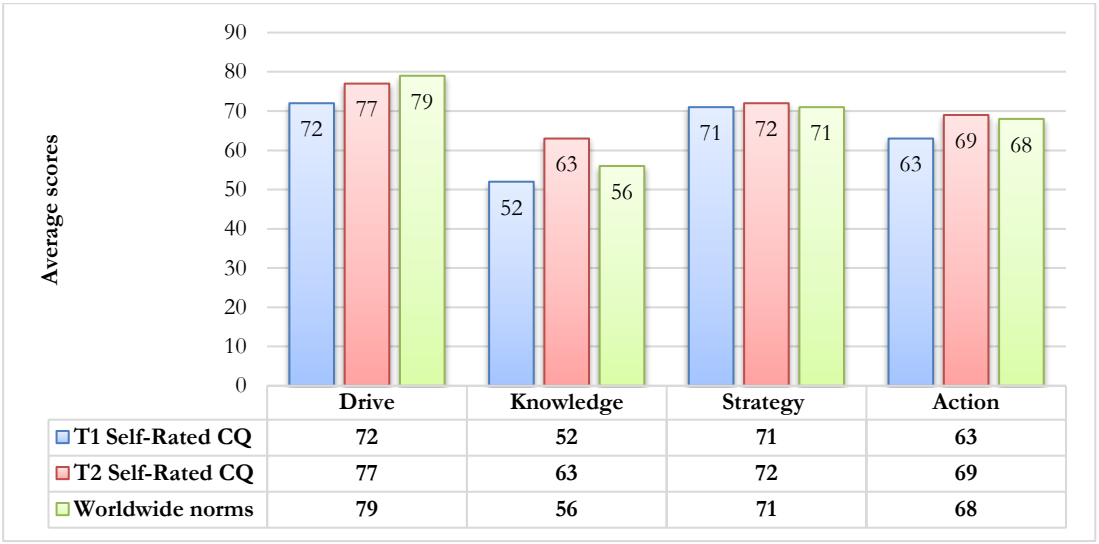
Learning Content	▪ Textbook (8 chapters) ▪ Classroom worksheets (instructor designed) ▪ Mini-lectures (topical contents) ▪ Online media, surveys, feedback ▪ International Virtual Exchange (IVE) Project (4 topics/8 weeks) ▪ Flipped method: textbook reading/audio downloads
Assessment & Evaluation	▪ Online review quizzes (4) (summative & formative) ▪ Online class feedback surveys (13) (formative)
Research	▪ CQ Scale (E-CQS reports provided by The Cultural Intelligence Center) ▪ Online surveys (analysis of the formative assessments) ▪ IVE Project (analysis of exchanges with international counterparts)

Instructional methods included variations of facilitated group- and/or pair work, engagement with online media (audio-visual), short lectures by the instructor, an online (asynchronous) exchange with a group of Colombian college students (IVE), and weekly learning reflections that employed online feedback and evaluation forms that were developed by the instructor. To investigate to what extent intercultural education through our course influenced the development of CQ, we surveyed participants pre- and post-course (Time 1 and Time 2, respectively), using an online version of the *Expanded Cultural Intelligence Scale* (E-CQS). These measured participants' self-reported intercultural capabilities and they received a personalized feedback report that compares their CQ with the worldwide norms. The instructor received a group-feedback report showing a summary of scores and a group profile description. A set of guidelines provided by the CQ Center assisted in the interpretation of the feedback. The E-CQS is offered on a commercial platform and captures a self-rated ability to perform and adapt in diverse environments which is used as a diagnostic tool for intercultural success (Ang et. al., 2011; Ang et. al., 2012). Upon completion of the online survey, the reports are automatically generated and made available for download. The data used to generate the reports (and used for subsequent analysis here) was obtained from the CQ Center.

Results

Developing cultural intelligence (CQ)

Participants' CQ development were measured pre- (T1) and post-course (T2), using an online version of the Expanded Cultural Intelligence Scale (E-CQS). Figure 2 shows a comparison of the results for T1 and T2, relative to the worldwide norms. Four observations can be made when average score differences between T1 and T2 are considered: (1) there were positive incremental increases on *all four* self-rated CQ dimensions measured in this group; (2) the increases at T2 surpassed the worldwide average for *three* of the CQ factors: *CQ knowledge* (63 vs. 56), *CQ action* (69 vs. 68), the *CQ strategy* factor (72 vs. 71), and (3) the *CQ knowledge* factor increased most markedly (11 average points), and (4) the average self-rated scores for the group – including the reported increases between T1 and T2 – fall within the *moderate* range (i.e., in the middle 50% of the worldwide norms). Taken together, and in view of the incremental advances from T1 to T2 relative to the world norms, these results broadly indicate that the intercultural education and training provided through our course positively impacted the development of CQ.



	Drive	Knowledge	Strategy	Action
T1 Self-Rated CQ	72	52	71	63
T2 Self-Rated CQ	77	63	72	69
Worldwide norms	79	56	71	68

Figure 2. T1/T2 Comparison of self-rated average CQ scores against worldwide norms

A comparison between self-rated CQ average scores and the worldwide norms presented in Table 2 indicates the percentage of change noted in each CQ factor. As pointed out earlier, the *CQ knowledge* dimension showed the most significant increase (21%), followed by – in diminishing ranked order – the dimensions of *CQ action* (10%), *CQ drive* (7%) and *CQ strategy* (1%). Table 2 further compares the T1/T2 comparative changes vis-à-vis the reported worldwide norms on the four CQ factors, and respectively as follows: (1) *CQ knowledge* increases by 11 points; (2) *CQ action* increases by 6 points; (3) *CQ drive* increases by 5 points; and (4) *CQ strategy* increases by 1 point. On average, all CQ factors therefore improved for the measured period between T1 and T2.

Table 2
T1/T2 Comparison and analysis for self-rated CQ average scores against worldwide norms

Dimension	*T1/T2 average score changes*	*% Change*	*T1 compared/ worldwide norms*	*T2 compared/ worldwide norms*
CQ Drive	72 → 77 *(5)*	7	7 points less	2 points *less*
CQ Knowledge	52 → 63 *(11)*	21	4 points less	7 points *greater*
CQ Strategy	71 → 72 *(1)*	1	0 points difference	1 point *greater*
CQ Action	63 → 69 *(6)*	10	5 points less	1 point *greater*

Given the overall relative increases that the group achieved between measurements, we conducted a paired-samples t-test for dependent samples to determine the significance of the increases for each of the CQ dimensions. The reasoning here was primarily to check the significance for our small group's performance within the larger scope of our project, but also as a measure of the potential effectiveness of the current iteration of the course. The results obtained for this group (N = 19) were as follows (see Table 3): (1) *CQ knowledge* increases were *significant* at $p < 0.5$, with the value of $t = 6.44$ (M: 0.72); (2) *CQ action* increases were *significant* at $p < 0.5$, with the value of $t = 2.98$ (M: 0.4) (3) *CQ drive* increases were *not significant* at $p < 0.5$, with the value of $t = 0.38$ (M: 0.05) (4) *CQ strategy* increases were *not significant* at $p < 0.5$, with the value of $t = 1.23$ (M: 0.04). The current iteration of the course therefore provides some encouraging results but should be viewed with some caution, given the small sample size (N=19).

Table 3.
Difference score calculations and T-values for CQ factors: Pre- & post measures

CQ Knowledge	*CQ Action*	*CQ Drive*	*CQ Strategy*
Mean: 0.72 *t* is 6.439854. *p* is <.00001 Result is *significant* at $p < 0.05$.	Mean: 0.4 *t* is 2.981997. *p* is .0032 8. Result is *significant* at $p < 0.05$.	Mean: 0.05 *t* is 0.380387. *p* is 0.7041 3. The result is *not signi ficant* at $p < 0.05$.	Mean: 0.04 *t* is 1.22655. *p* is 0.2216 9. The result is *not signifi cant* at $p < 0.05$.

Discussion of findings

(1) A primary purpose of the current investigation was to obtain an independent CQ measure for the impact of our blended-learning approach to intercultural skill development with a group of undergraduate students. Based on the independent report measures provided by the CQ Center (2018), the overall finding that there were positive incremental increases (within the moderate range) on all four self-rated CQ dimensions for this group is therefore very encouraging. This finding was further strengthened through the statistically significant improvements observed with the subdimensions of *CQ knowledge* and *CQ action,* suggesting that these dimensions, in particular, were supported through our course. The *CQ knowledge* dimension is defined as a person's knowledge about how cultures are similar and/or different and includes a knowledge of values and norms, business practices, leadership patterns and socio-linguistic behaviours (Ang et. al., 2012; Cultural Intelligence Center, 2018). In contrast, the *CQ action* dimension refers to a person's capability to adapt verbal and non-verbal behaviour so that it is appropriate across cultural contexts (Ang et. al., 2012; Cultural Intelligence Center, 2018). For these 2 CQ dimensions, we understand then that our learners self-rated their CQ development as gaining significant improvements, which highlights the theoretical (knowledge-related) and linguistic aspects of the cultural learning contents provided in the undergraduate course.

A comparatively similar study in New Zealand (Fischer, 2011) reported significant *CQ knowledge* increases following a brief intercultural intervention embedded in university course and concluded that such interventions are effective in raising intercultural awareness, especially in the sense of providing students with a "reality check" (Fischer, 2011, p. 773) in terms of their intercultural skills and abilities. The finding that students' CQ knowledge (or cognition) can be developed through university academic courses is also reported elsewhere (Eisenberg, Lee, Brück, Brenner, Claes, Mironski & Bell, 2013; Van Dyne, Ang, Ng & Koh, 2008), and the incremental increases in this dimension reported here as a result of our course can therefore further support similar studies in this area. It is further noteworthy that a significant increase in *CQ action* was observed in our study. Eisenberg et. al. (2013) postulates that university lectures typically emphasise cognitive aspects of intellectual development, whereas the emotional and behavioral (or experience-based) dimensions of learning are often neglected. Since the practical

nature of experience-based learning adds an additional dimension to the learning process (Kolb, 1984), and specifically to intercultural learning (Macnab, 2012), our project has strived to incorporate this as a foundational principle since inception. Eisenberg et. al. (2013) reports that this CQ dimension is "… readily affected by extensive, purposefully designed experiential learning interventions" (p. 616). It is therefore particularly encouraging that our participants observed an enhanced sense of confidence in the *CQ action/behavior* dimension upon completion of the course. While these findings are a meaningful result within the larger scope of our project, it should be reiterated that the current sample is small and very localized in the present research context, in addition to the fact that our course is still technically in a developmental phase. We are however, encouraged by the current set of results that appear to support findings elsewhere in this area.

(2) Although developments in the *CQ drive*- and *CQ strategy*-dimensions were less pronounced (not statistically significant), these factors nevertheless showed improvements. *CQ drive* refers to a person's motivation, interest and confidence in functioning effectively in culturally diverse settings and includes both intrinsic and extrinsic interest components, as well as a measure of self-efficacy (Ang et. al., 2012; Cultural Intelligence Center, 2018). Our learners progressed well in this regard as a result of our course intervention and achieved a result that compares favourably with the stated worldwide norm for this dimension of CQ. A similar result was in evidence for the *CQ strategy* dimension which improved to slightly exceed the given worldwide norm. *CQ strategy,* signifying a meta-cognitive dimension, refers to how a person makes sense of culturally diverse experiences, for example making judgments about their own thoughts or those of others. It thus includes an underlying cultural awareness, as well as cognitive aspects of planning and checking in social situations characterized by cultural diversity (Ang et. al., 2012; Cultural Intelligence Center, 2018). In slight contrast to the Eisenberg et. al. (2013) study, who found pronounced effects on both *CQ-cognition* and -*strategy,* our results did not show a statistically significant effect for the *CQ strategy/metacognition* dimension. This result could be indicative of participants' self-assessed, relative (lack of) confidence development pertaining to this CQ dimension. This result might indicate a contextual factor, namely the largely homogenous population of our students and the absence of regular international counterparts on campus. These circumstances imply that fewer opportunities for exposure to intercultural exchange that could develop these skills in a 'real-world' manner, exist. These insights deserve further exploration and potential development in a future course iteration.

(3) It is further important to contrast these findings with other indicators obtained from earlier iterations of this course and the overarching goals of our project. Earlier qualitative findings, gleaned from formative and summative participant performance, course feedback and measurements, indicated advances that could be tied positively to CQ developments (Roux & Suzuki, 2017; Roux et. al., 2018, Roux et. al., 2019). The current results further enhance and help to validate these earlier findings to some degree; however, in view of the small sample size we interpret the present result with some caution. Furthermore, the current study utilized an online version of the CQ measurement, whereas our earlier study made use of the original paper-based version. A cursory comparison between the two CQ measurements indicates a utilization of the same CQ-factor-structure in both versions; however, questions in the E-CQ version were expanded and also made available in Japanese. It therefore may be that these two factors lead to a quantitatively different result for the separate iterations of our course. These observations are speculative at this stage however and will need to be further explored.

(4) Intercultural measurement instruments need to demonstrate construct validity and measurement equivalence across cultures and the CQS has demonstrated reliability in these areas (Ang et. al., 2018). Given that the CQS is a self-rating scale, a number of studies have also sought to replicate findings with multinational samples and found short and longer-term consistency, a good internal consistency reliability, as well as predictive validity (Ang et. al., 2007; Van Dyne et. al., 2008; Ang et. al., 2012). Findings from the present investigation, which used the E-CQS with a Japanese population, potentially lend further support to these cited studies and, with replication in other Japanese tertiary contexts, could add to the growing literature on the multinational validation of CQ.

(5) Considering the application of our framework (Roux & Suzuki, 2017) in conjunction with a blended learning approach (Roux et. al., 2018), the current set of results are encouraging. The assessment and research elements we designed fitted seamlessly with other course elements and combined well with existent approaches in blended learning formats for further course iteration, suggesting that our framework is functional and adaptable. The framework's multi-disciplinary integration of ID theories and models, CQ theory, experiential learning theory and the blended learning approach has demonstrated value through repetition in the current study. We are encouraged to continue in this vein for at least two reasons: (1) there is an existent challenge to provide a pedagogy for intercultural learning in higher education (Fischer, 2011; Eisenberg et. al., 2013), and (2) there is an ongoing call for instructional designers to infuse and deepen their methods, materials and practices with due consideration to an increasingly diverse, global student audience (Clem, 2004; Henderson, 2007, Lovvorn & Chen, 2011). We

are therefore considering applications of this framework to similar, but larger and more internally diverse participant groups, and expanding it to online environments which could include more instructors.

Conclusion

The current study presents a further iteration in a project that seeks to develop cultural intelligence (CQ) through the application of instructional design (ID) theory and methods. For the present iteration, specific goals were to obtain an independent measurement of the effects on CQ development – utilizing the online service of the *Cultural Intelligence Center* (www.culturalQ.com) and to consolidate the blended learning approach into our existing framework (Roux & Suzuki, 2017; Roux et. al., 2018). Results show that CQ scores for our group of participants increased on average, when compared to worldwide norms. Although these increases remain within the *moderate* range, two of the CQ sub-dimensions demonstrated statistically significant increases, whereas other indicators showed that our group of participants enhanced their CQ as a result of the intercultural learning course. Current findings further support earlier reports from this project (Roux & Suzuki, 2016, 2017; Roux et. al., 2018), validating earlier discoveries. We are encouraged that the findings appear to provide further support for the efficacy of our framework, course design and instructional methods. Future research work will aim to repeat the current investigation in an effort to replicate the results and refine instructional methods with Japanese student groups, but also aim toward applications with diverse groups in Japanese educational settings. In keeping with larger project goals, further efforts will also be given to understanding some of the processes that nurture intercultural learning and the development of CQ, and more specifically, how these might benefit from the application of online technologies.

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