**Digital Kids Asia Pacific (DKAP)**

**Research Manual**

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# Part 1. Overview of DKAP Project

## 1. Objective and Purpose of Project

Since 2014, UNESCO Bangkok has implemented the “Fostering Digital Citizenship through Safe and Responsible Use of ICT” Project (hereafter referred to as “Project”). The overall goal of this project is to promote and sustain policy dialogue in the Asia-Pacific on the issues of the safe, effective and responsible use of ICT and to build the education sector’s capacity to foster digital citizenship among children.

As part of the Project, the “Digital Kids Asia Pacific (DKAP)” project component seeks to conduct a comparative cross-national study to address the Asia-Pacific region’s knowledge gap regarding children’s ICT practices, attitudes, behaviors, and competency levels within an educational context. Specifically, the objectives of the DKAP project are to:

* Contribute to the evidence-base in Asia-Pacific by obtaining and comparatively analyzing quantitative and qualitative data on children’s actual attitudes, behaviors, competency levels, and use of ICT within an educational context.
* Establish an evidence-based understanding of children’s safe, effective and responsible use of ICT in Asia-Pacific by developing and validating a framework that can measure children’s attitudes and behaviors, competency levels, and use of ICT within an educational context.

The expected output of this project is a comparative cross-national study that:

* Sets out a reliable and comprehensive baseline in four pilot Asia-Pacific countries of children’s actual attitude, behaviors, competency levels, and use of ICT within an educational context that will inform relevant education policies and practices.
* Assesses whether the framework’s domains and competencies are valid, based on the data gathered from pilot countries, for measuring children’s attitudes and behaviors, competency levels, and use of ICT within an educational context.

## 2. Scope

The DKAP project aims to develop the toolkits that measure not just what students know and understand how to use digital devices and digital information but also how students progress, that make students’ emotions and thoughts visible, and that allow for creative thinking. The final report would include analysis of the correlations between students’ personal traits based on contextual questionnaire such as gender, ICT familiarity, family background, school and community life and their digital citizenship competencies. In addition, this project would improve the understanding of students’ competencies in their own country in comparison with those of other participating countries. Accordingly, the scope of what DKAP measures is expanded from knowledge and skills that students have acquired to potential competencies that they can apply in the future. This encompasses not only the identification of students’ cognitive and non-cognitive competencies but also in-depth exploration of how students’ personal, social, cultural and educational factors are associated with their digital citizenship.

## 3. Methodology

Working closely with UNESCO Bangkok and other research teams in pilot countries, the project will strive to create an accessible research tool that provides data/evidence that will guide recommendations and policy guidelines for educators, policymakers and other stakeholders. The project will obtain quantitative and qualitative data from four pilot countries in Asia-Pacific including Vietnam, Bangladesh, Fiji and Republic of Korea. Various research methods are expected to be used.

* **Literature Review**
* **Instrument Development**

Survey questionnaires for target respondents were designed and developed by members of the Institute of School Violence Prevention (ISVP) team of Ewha Womans University of South Korea. After initial development, ISVP team conducted an expert review and field tests for ensuring item reliability and validity using small sized samples of Korea.

* **Quantitative Study**

Data will be utilized to validate the survey questionnaire and to further revise and develop the research toolkit by synthesis of the key findings from the pilot countries (Vietnam, Bangladesh, Fiji, and Republic of Korea). The target age group is secondary aged children (15 years old) to ensure that the research findings can be used by Ministries of Education to inform digital citizenship curriculum development and contribute to the knowledge-base relevant to SDG 4 indicators. The expected audience includes policy makers, various stakeholders from the ICT and education sectors, civil society, UNESCO Bangkok and other regional and local organizations in the Asia-Pacific region.

* **Qualitative Study**

In addition to the survey data collection, a focus group interview will serve to gather a limited amount of qualitative data from students to gain a better understanding of underlying opinions that are grounded in lived experiences and in the participants’ own words. Among samples who participate in the survey, a sample of Korean students who are high performers in digital worlds (e.g., who report that he/she has adequate experiences in developing websites or applications or/and has ever learned coding skills) will be used for a focus group interview. Interview questions will be made based on the result of quantitative study.

## 4. Research Framework

Bronfenbrenner (1994)’s bio-ecological model is applied in the study as the main research framework. The model explains a child’s development within the context of the system of relationships that form his or her environment. An individual child is located within specific socio-demographic contexts, shaped in turn by a range of cultural and societal factors at the national and trans-national levels.

Specifically, the model defines complex layers of environment, each having an effect on a child’s development. First, a *microsystem* refers to relationships between the developing person and their direct and immediate environment. Second is a *mesosystem* involving inter-relationships between two or more microsystems in which the developing person actively participates (e.g., the child’s inter-relationship between home and school). Third is an *exosystem* comprising one or more settings that do not involve the developing person as an active participant, but which have a bearing on the subject. Forth is a *macrosystem* in the form of structural consistencies across the subculture or culture along with relevant belief systems or ideologies that underpin this structure

While theoretical analysis of children’s development of digital competencies as well as the experience of new digital technologies remains under-developed, Bronfenbrenner’s bio-ecological framework provides a useful basis for a child-centred approach to children’s behaviours, knowledge, or attitudes relating to ICT, contextualized within the structuring social influences, represented as concentric circles of family, schools or community and culture.

The model (Figure 1) applied in this study acknowledges three sets of interdependencies:

* At the level of the individual within the microsystem;
* At the level of social mediations, principally related to home, school system and peer cultures within mesosystem; and
* At the national level where the country is the unit of analysis and where macrosystem phenomena of socio-economic stratification, systems of regulation and cultural values act as shaping factors.

[Figure 1] Research Framework of the Study

## 5. Research Questions

The overall research question in this project is:

“Is DKAP measuring the “digital citizenship competency” of Asia Pacific students?”

To answer this question, more specific sub-research questions are established.

* 1. What are the criteria of measuring the digital citizenship competency?
  2. Is the validity of DKAP appropriate?
  3. Is the reliability of DKAP appropriate?
  4. Are there any differences in 15-year-old students’ digital citizenship competency associated with the individual and contextual characteristics such as gender, family background, schools and local communities within a country?
  5. Are there any differences in 15-year-old students’ digital citizenship competency across countries?

# Part 2. Instrument Development

## 1. DKAP Competency Framework

DKAP instrument is developed with reference to the digital citizenship competency framework (DCCF) that was initially developed by UNESCO Bangkok and is designed to measure digital citizenship competency, defined as “ability for a young digital citizen to navigate, participate and contribute to the digital environment in the 21st century.”

DKAP instrument consists of two parts: (1) contextual questionnaire and (2) survey questionnaire. The contextual questionnaire contains 33 items asking about students’ ICT experiences along with background information. The survey questionnaire contains 71 items asking about students’ competencies across five domains.

The following bulleted list sets out the five domains and corresponding aspects of the DKAP framework. Domain and sub-domains have been initially developed and refined through a series of meetings led by UNESCO Bangkok.

**[Five Domains of DKAP Competency Framework]**

* Digital Literacy: The ability to seek, critically evaluate and use digital tools and information effectively to make informed decisions
* Digital Safety & Resilience: The ability to understand how to protect oneself and others from harm in digital space
* Digital Participation & Agency: The ability to equitably interact, engage and positively influence society through ICT
* Digital Emotional Intelligence: The ability to recognize, navigate and express emotions in one’s digital intrapersonal and interpersonal interactions
* Creativity & Innovation: The ability to express and explore oneself through creation of content using ICT tools

The following table provides an overview of the framework in full, outlining each competency dimension.

<Table 1> Domains and Competencies

| **Domains** | **Competencies** |
| --- | --- |
| **Digital Literacy** | 1.1 **ICT Literacy**: The ability to manage and operate ICT hardware and software responsibly in digital environments to access and search for data, information and content, and to utilize them |
| 1.2 **Information Literacy**: The ability to seek, critically evaluate and use digital information effectively to make informed decisions. |
| **Digital Safety & Resilience** | 2.1 **Understanding Child Rights**: The ability to understand legal rights and obligations within the global and local context |
| 2.2 **Personal Data, Privacy and Reputation**: The ability to understand how to use and share personally identifiable information while being able to protect oneself and others from harm. Be able to implement strategies for information and device security and personal security protocols. |
| 2.3 **Promoting and Protecting Health and Well-Being**: The ability to identify and manage health risks, and use digital technology in order to protect and improve the physical and psychological well-being of oneself and others |
| 2.4 **Digital Resilience**: The ability of being preventative, reactive and transformative that allows young people to avoid or cope with risky situations they face and improve themselves. |
| **Digital Participation & Agency** | 3.1 **Interacting, Sharing and collaborating**: The ability to interact, share data and information, and collaborate with others using suitable digital technologies to achieve shared goals (work, social, leveraging network, education, entertainment, etc.). |
| 3.2 **Civic Engagement**: The ability and willingness to recognize seek, and act on opportunities to positively influence local and global communities online and/or offline through appropriate digital technologies. |
| 3.3 **Netiquette**: The ability to demonstrate ethical and courteous behavior to inform choices in interacting and engaging in different digital environments with different audiences. |
| **Digital Emotional Intelligence** | 4.1 **Self-Awareness**: The ability to explain one’s moods, emotions, drives, and how these affect oneself and others in the digital world through introspection. |
| 4.2 **Self-Regulation**: The ability to manage one’s emotions, moods and impulses during online engagements |
| 4.3 **Self-Motivation**: The ability to demonstrate initiative, commitment to attain internal or external goals despite setbacks in the digital sphere. |
| 4.4 **Interpersonal Skills**: The ability to build positive online relationships to communicate, build rapport and trust, embrace diversities, manage conflicts and make sound decisions. |
| 4.5 **Empathy**: The ability to demonstrate awareness and compassion for the feelings, needs and concerns of others during digital interactions |
| **Creativity & Innovation** | 5.1 **Creative Literacy**: The ability to apply skills and use tools to create/adapt/or curate digital content |
| 5.2 **Expression**: The ability to use technology to represent or express creatively children’s identities |

## 2. Scope and Format

DKAP questionnaire consists of a contextual part, which regards background information items, and a survey part with five domains about digital citizenship.

For contextual questionnaire items, there are 33 items asking about background information and ICT experience. Item formats employed were selected response, which were in multiple-choice format of the standard type. Students are required to check the items that correspond with their information from a set of options in the corresponding area.

Survey questionnaire consists of 71 items in the form of 4-point Likert scale that range from ‘agree a lot’ (4) to ‘disagree a lot’ (1). Items ask how much students agree with the statements about each category. That is, students are required to fill one circle for each line, which asks about their competencies across five domains. Sentences describing each competency are presented in terms of the specific situations and examples to enhance the accuracy and validity of the questionnaire. In the second domain, Digital Safety and Resilience, some items ask about how students will react in the specific situation. These items are in the form of multiple select questions, which allow students to choose all the items that can apply to their reaction.

## 3. Item Development Process

The questionnaires used in the survey were developed by the ISVP team in collaboration with UNESCO Bangkok. They were then tested and refined through a two-phase process of expert review/focus group discussion and field pretest. Although these stages followed one another sequentially, the iterative and collaborative nature of the overall process meant that some materials were reviewed and revised more than once within particular stages.

[Figure 2] Item Development Process

1. **Item Development**

In terms of the scope and topics, the survey questionnaire was based on comprehensive review of existing research on children’s competency related to ICT use both in terms of findings and the questionnaires used.

An initial draft of the questionnaire was made by the ISVP team in close conjunction with UNESCO Bangkok. This stage took the research design from a scoping of the theoretical framework and research review, through to a draft questionnaire that encompassed the key issues (i.e., digital competencies) to be addressed, and seeking to question formats and response options so as to be readily comprehensible by adolescents.

The survey questionnaire consists of 91 items. Some items are directly taken from existing questionnaires or instruments used in the reviewed literature. Others are modified from existing questionnaire or literature, considering national, cultural or digital contexts. Several items are newly generated by the ISVP team due to a lack of relevant literature. More specific information is provided in Annex A.

1. **Expert Review**

Following this early development work, substantive (subject matter) experts were involved in revisions of the draft questionnaires, making sure the items meet research objectives. Independent panels of experts reviewed the items. The following guidelines for reviewing survey items were used during each review process.

* Does each item measure the objective it is designed to measure?
* Is each item based on the content that is accurate and current?
* Does this understanding match what the survey designers intended?

These experts also reviewed the items to make sure the instrument and questions up to best practices for generating accurate and meaningful answers from respondents.

* Are the response sets reasonable?
* Is the wording technically correct and appropriate?
* Will all questions be understood in the same way by all respondents?

Following each review process, ISVP team and the item review panel discussed suggestions for revisions related to each item. Items were revised only when both groups agreed on the proposed change.

1. **Field trial**

Prior to main data collection, ISVP team conducted a field test in February 2018 using Korean samples. The field-test sample size was approximately 269 15-years-old students from two secondary schools located in Seoul.

One of the purposes of the field pretest was to test reliability and validity (construct validity) of the survey questions. Confirmatory factor analyses to determine construct validity and reliability of each scale across the pooled samples were conducted. The results showed that the reliability of each variable was considered statistically sufficient. More detailed information will be provided in the technical report.

Another purpose of the field trial was to evaluate the instrument under actual fielding conditions. The following questions were answered by the result of field pretest.

* How long does it take respondents to complete the survey?
* Is there a pattern in missing data? (e.g., is there a high level of missingness for one or more items?)

The field trial showed that participating students took approximately 30 minutes to complete the main questionnaire. There was no specific item having a high level of missingness.

## 4. Development of Contextual Questionnaires

At the student level, children’s characteristics (e.g., gender) and background (e.g., social status) as well as ICT familiarity (e.g., frequency of Internet usage) can be antecedents for their digital competency level. The vast majority of contextual questions were adopted from PISA survey and Global Kids Online, however, the wording of some questions was modified to improve the quality of the data. The contextual questionnaire is presented after the main questionnaire.

<Table 2> Components of Contextual Questionnaire

|  |  |  |
| --- | --- | --- |
| **Student Characteristics** | **ICT Familiarity** | **Family Context** |
| Gender | ICT Usage | Family Structure |
| Year of Birth | Years of ICT Usage | Parental Education Level |
| Grade | Frequency of Internet Use | Possessions |
| Language at Home | Digital Devices Access | Parental ICT Support |
| Cultural Origin | Internet Access |  |
| Educational Aspiration | ICT Learning Resources |  |
| School Life | Online Practices |  |
| Time Use | Learning experience on ICT skills |  |

# Part 3. Operations

## 1. Translation and Verification

A master questionnaire is finalized in English. National versions will be then produced in appropriate languages. The overarching principle of the translation and adaptation process is that the meaning and difficulty of the questions, instructions, and tasks in the instruments should be equivalent across all countries after completion of the adaptation and translation work. The focus is on cross-cultural and conceptual, rather than on linguistic/literal equivalence. Each national team is responsible for coordinating the translation verification of all instruments.

<Table 3> Test Language by Country

|  |  |
| --- | --- |
| **Country** | **Language** |
| Vietnam | Vietnamese |
| South Korea | Korean |
| Fiji | English |
| Bangladesh | Bangla |

Principles of translation are as follows:

* Translators should always aim at the *conceptual equivalence* of a word or phrase, not a word-for-word translation, i.e. not a *literal translation*. They should consider the definition of the original term and attempt to translate it in the most relevant way.
* Translators should strive to be simple, clear and concise in formulating a question. Fewer words are better. Long sentences with many clauses should be avoided.
* The target language should aim for the most common audience of youth. Translators should consider the typical respondent for the instrument being translated and what the respondent will understand when s/he hears the question.
* Translators should consider issues of gender and age applicability and avoid any terms that might be considered offensive to the target population.

Essential qualifications for translators include:

* Excellent knowledge of English and target language;
* Basic knowledge on contents (i.e., digital citizenship);
* Experience or knowledge in survey design.

Implementation of translation and adaptation includes the following steps:

[Figure 3] Translation Process

1. **Forward Translation**: Two researchers experienced in opinion surveys independently translating the questionnaire and compiling the two translations into one.
2. **Expert Panel**: At least one expert panel who is bilingual (in English and the target language for translation) identify and resolve the inadequate expressions/concepts of the translation, as well as any discrepancies between the forward translation. All necessary adjustments are made to the modified questionnaire.
3. **Back Translation**: The modified questionnaire should then be sent to back-translation by a native English speaker with a sufficient level of knowledge in the source language. The back-translated documents should be checked against the original English questionnaire by national research team. All necessary adjustments are made to the modified questionnaire.

As well, back-translation document should be sent to and verified by ISVP or UNESCO team (See Annex B). Iterative process of refinement and modification will be conducted until agreement among national research team and ISVP is reached.

1. **Cognitive Interviewing** (not required but recommended): Cognitive interviewing is recommended on the target population, making sure that the questions make sense to children after translation. Pre-test respondents are administered the instrument and be systematically debriefed. Respondents are asked:
   * + - What they thought the question is asking;
       - Whether they could repeat the question in their own words;
       - What comes to their mind when they heard a particular phrase or term;
       - How they choose their answer; and/or
       - Whether there is any word they did not understand as well as any word or expression that they found unacceptable or offensive.

These questions should be repeated for each item. The answers to these questions should be compared to the respondent’s actual responses to the instrument for consistency. All necessary adjustments were made to the final questionnaire by the national research team.

1. **Final Version**: The final version of the instrument in the target language should be the result of all the iterations described above. All the cultural adaptation procedures should be traced briefly through the appropriate document and sent back to ISVP team. It may include:

* A summary of recommendations by the expert panel and cognitive interviewing and the modifications proposed;
* Information on the samples used in this process (i.e. the composition of the expert panel and the cognitive interviewing samples).

## 2. Sampling Design

For effective analysis, ISVP recommends that each country is required to have a sample size of at least **1,000** tested students. With the anticipation of response rate or consideration of other factors affecting students’ participation in survey, each national research team needs to make decisions on the sample size appropriate for their countries.

1. **Target Population Definition**

The desired target population in each country consists of 15-year-old students who are:

* Attending educational institutions in grades 8 and higher;
* Enrolling full-time in educational institutions;
* Not having following reasons including limited proficiency in the questionnaire language, intellectually/functionally disability.

1. **Sampling Frame (Recommended)**

Each regional team is responsible for sampling to ensure representation of the full target population of 15-year-old students in the participating countries. Each country is required to have an achieved student sample size of at least 1,000 surveyed students.

However, the sampling method can vary by country reflecting different circumstances including the size of the country, its complex geographical characteristics, or its socioeconomic disparities. As well, the sampling method will be modified to reflect context realities per country. All the cultural adaptation procedures should be traced briefly through the appropriate document and sent back to the ISVP team.

The recommended sampling method is **stratified two-stage cluster** design.

* During the first stage, with stratification, independent samples of schools are selected from each explicit stratum. During the second stage, target-grade students are selected with equal probability within participating schools.
* A minimum size of **20 schools**, in which **50 students** are selected, should be sampled for this study.

Stratification is used to improve the efficiency of the sample design, thereby making survey estimates more reliable and reducing standard errors. Examples for such groups of units are geographic region, urbanization level, poverty level, public/private status, and performance level.

Again, stratification types can vary by country reflecting different circumstances. Each country can apply different stratification schemes based on national research team’s decision. For example, South Korea will apply two stratification variables: urbanization level and poverty level. Thus, five schools will be selected in each stratum.

<Table 4> Example of South Korean Sample

|  |  |  |  |
| --- | --- | --- | --- |
| **South Korea** | | Region | |
|  | | City | Rural Area |
| School Status | Public | 5 | 5 |
| Private | 5 | 5 |

School-level exclusion and within-school exclusion can be made in case to reach an effective target population. Students eligible for school-level exclusion are identified by national research team. School-level exclusions include schools that:

* Are geographically remote;
* Have very few students;
* Have a curriculum or structure different from the mainstream education system; and
* Are specifically for students with special needs.

Students eligible for within-school exclusion are identified by the survey administrator at the schools and could still be administered the survey if the school did not want the student to feel out of place during the measurement. It is important to ensure that this population was as close to the national desired target population as possible. Within-school exclusions include the reasons:

* Intellectually/physically disabled students: This includes students who are mentally and functionally unable to follow even general survey instructions
* Non-native language speakers: These are students who are unable to read or speak the language(s) of the survey
* Students who do not want to participate in survey administration

## 3. Field Operations

Officially, field operations are expected to be done offline with paper administration mode. However, the option of online administration instead of in paper form is also available in order to lift the administrative burden of either national research team or school coordinator.

### Field Operations Personnel

The roles of the national research team in charge of the overall implementation of the study at the national level include:

* Identifying eligible schools;
* Identifying a school coordinator who involve in survey administration in schools;
* Arranging the date(s) and modalities of the survey administration;
* Distributing instruments and related materials needed for school coordinator; and/or
* Working with the school coordinator to plan and administer the student surveying;

Each national research team is responsible for strengthening the risk assessment and monitoring the risk treatment plans for identified risks. Also, each national team is expected to make a country documentation of experiences (e.g., lessons learned, modification conducted, innovations needed, recommendations).

The role of school coordinators is involved preparing for the survey administration in schools and carrying out the data collection in a standardized way. The school coordinator could be a teacher or other staff member in the school and their roles include:

* Identifying eligible students and teachers belonging to the target population to allow the national center to perform within-school sampling;
* Working with survey administrators to plan and administer the student surveying;
* Distributing instruments and related materials needed for measurement to survey administrator;
* Checking if survey administrators are adequately prepared to run the measurement sessions
* Obtaining parental permission as necessary
* Providing school information to national research team
* Collecting and organizing survey materials for shipment to national research team.

The survey administrators are mainly responsible for administering the student questionnaire. Their responsibilities include distributing materials to the appropriate students, leading students through the measurement, and timing the sessions accurately. In most case, survey administrators would be teachers in a class or other staff members in the school.

### Field Operations Resources

ISVP team will release main and contextual questionnaire as well as a manual for survey administrator to the national research teams and each national team will release them (translated ones if needed) to school coordinators.

### Field Operations Processes

There is a brief description of field operation process. However, each step could be removed or modified or additional step could be added by national research team reflecting different circumstances in each country.

[Figure 4] Field Operations Processes

1. National research team (NRT) identify eligible schools, select the participating schools, and contact the schools

Based on the sampling method suggested in page, NRT is responsible for identifying eligible schools and select the participating schools. Once participating schools are selected, NRT is responsible for contacting these schools, encouraging participation in the survey, and if necessary, involving in obtaining support from national or regional education authorities. NRT sends a *student listing form* to each school coordinator and asks him or her to provide information on all eligible target-grade students in the school.

1. School coordinator sends the list of all in-scope students to NRT

School is responsible for sending the list of all in-scope students to NRT with their demographic information including age, gender, and exclusion status.

1. NRT samples students

NRT is responsible for sampling students from comprehensive lists of target-grade students provided by the participating schools and sending the list of sampled students to school coordinators. Students are expected to be randomly sampled was across all target-grade classes. However, if needed, intact classrooms can be sampled instead of single students. In addition, NRT should generate the list of up to 20 replacement students. The list will be sent to the school coordinator.

1. NRT and school coordinator make agreement on the availability of sampled students and the survey process (e.g., survey date/place)

NRT and school coordinator need to make agreement on the availability of initially sampled students. If there is a student who is initially sampled but does not want to participate in survey administration due to private reasons, another student who is the first place of the replacement list is assigned as the replacement. Through the iterative process of replacement, NRT and school coordinator make the final list of participating students.

Another responsibility of the school coordinator at this stage includes coordinating the date, time, and place for measurement with the agreement of NRT. In addition, school coordinator should choose survey administrators in the school.

1. NRT send questionnaire and manual to school coordinator

NRT distributes packaged materials to each school coordinator, who confirm receipt of all materials, prior to the measurement date. Materials include student questionnaire and manual for survey administrator and should be kept in a secure room until the measurement date.

1. School coordinator and survey administrators prepare for the survey administration

At this stage, the School Coordinator and survey administrators prepare for the survey administration. The School Coordinator is responsible for confirming survey plan with survey administrators; distributing questionnaires to survey administrators; obtaining parental permission (if necessary); training survey administrators (if necessary); etc. The School Coordinator is also responsible for confirming that all materials are prepared for the surveying; setting up rooms and materials; familiarizing themselves with explanatory notes on student questionnaire items; etc.

1. Survey administrator conducts the survey

During the administration of the survey, the role of the survey administrator is to distribute materials to the students, lead students through the survey process, and to time the survey sessions accurately. Survey administrators may need to provide a range of instructions to students where necessary.

It is essential that the survey administrators are able to accurately and comprehensively convey the meaning of each questionnaire item to students where students have questions or seek clarification.

The time allocation is standardized across countries, with 80 minutes allowed for each part of the achievement booklet. However, if all of the students complete their surveys before the allocated time, the survey administrator can end the survey session.

<Table 5> Time Allocation

|  |  |
| --- | --- |
| **Activities** | **Length** |
| Preparation of students, reading of instructions, and administering the tutorial | Approx. 20 min. |
| Administering the main and contextual questionnaire | 80 min. |
| Collecting the instrument materials and ending the session | Approx. 10 min. |
| Total | 110 min. |

1. School coordinator collects survey materials for shipment and sends them back to NRT

Once the administration is completed, the School Coordinators are responsible for collecting and returning all materials to their NRT. At this time, School Coordinators should return the school-related information form (see Annex C) after filling out the information on school’s demographics and resources.

## 4. Focus Group Interview

A small number of Korean students who are high performers in digital worlds (e.g., have adequate experiences in developing websites or applications using coding skills or software) among the students who participate in survey will be sampled for the focus group interview. This is due to the limited time and budget allocated for this project.

The technique of interview is of immense use and value in qualitative research since they emphasize the in-detail and holistic description of activity or situation. By conducting a focus group interview, ISVP expects to gain a better understanding of underlying opinions on each digital competency in participants’ own words. As well, the effect of the experiences of ICT on the development of each digital competency will be answered by interviewees. Specific interview questions will be developed after initial quantitative data analysis is done.

## 5. Ethics and Child Protection

The study should be conducted in an appropriately ethical manner. All aspects of methodology and approaches to survey implementation were discussed and made in agreement with UNESCO Bangkok.

ISVP describes the data privacy at the beginning of the survey questionnaire as that “your answers will be combined with answers from other students to calculate totals and averages. All information (or responses) you provide may only be used for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose.” Participants’ names are not requested so it will not be possible to link responses to individual children.

Additionally, the purpose of the study is briefly described in the survey questionnaire. The information is necessary to make a judgement whether a participant make a part in the survey or not. If there is a student who is initially sampled but does not want to participate in survey administration due to private reasons, the next available student on the replacement list should be assigned to replace the student who chooses not to participate.

Some countries may need to obtain consents from either/both parent or/and a child to conduct a survey. In the case, each national research team should develop an informed consent for either/both parent or/and a child to provide the information necessary to make an informed judgement about taking part in the survey. Anonymity and confidentiality of responses should be also guaranteed to either/both parent or/and a child. In addition, if some advocacy steps are needed for school administrators, parents, or communities, each national team may make an advocacy leaflet to ensure if school administrators, parents, or communities understand the purpose and the content of this survey.

Any other ethical issues raised in each country should be notified to ISVP and UNESCO Bangkok and documented in each country’s report.

# Part 4. Documentation

## 1. Data Management and Creation of the DKAP Database

Each national center is responsible for inputting the information collected in survey booklets and paper-based questionnaires into data files. As a rule of thumb, national research teams are instructed to enter data for any questionnaire that contain at least one valid response, discarding unused or empty questionnaires files using a predefined codebook. The codebook contains information about the names, lengths, labels, valid ranges for continuous measures or counts or valid values for nominal or ordinal questions, and missing codes for each variable.

As documented in the Translation and Verification section, national research teams are expected to make appropriate adaptations to certain questions in the questionnaires (e.g., the questions about parents’ education and digital devices must be adapted to the national context). **National research teams that make any adaptations are required to modify the codebook structure to reflect the adaptations made to the country questionnaire version before starting the data entry process**.

Data files should be created at each country’s national center and cleaned prior to submission to the ISVP team. Data cleaning is the process of checking data for inconsistencies and formatting the data to create a standardized output. The overriding concerns of the data cleaning process are to ensure that:

* All information in the database conforms to the defined data structure.
* The content of all codebooks and documentation appropriately reflects country modifications to the country questionnaires.
* All variables used for international comparisons are in fact comparable across countries.
* All institutions involved in this process apply quality control measures throughout in order to assure the quality and accuracy of the DKAP data.

After each country has submitted its data, codebooks, and documentation, the ISVP team will conduct another round of data cleaning on the submitted data and documentation. Any inconsistencies detected during the cleaning process are resolved in collaboration with national centers, and all corrections made during the final cleaning process should be documented in a cleaning report, which will be part of the country research report produced by each country.

## 2. Analysis Plan

DKAP is designed to provide students, schools, local communities and countries with an opportunity to identify their own strengths and weaknesses in digital citizenship. DKAP offers a source of information for investigating variations in students’ competencies both within and across the nations, and analyzing the relationship between contextual variables and the level of students’ digital citizenship.

Using the data from questionnaires, DKAP will analyze differences between students within countries in terms of summary statistics based on the predefined five domains with 16 different competencies. More specifically, for categorical variables, representing the majority of variables, the percentages of respondents choosing each of the response options will be displayed. For continuous numeric variables, a variety of descriptive statistics including the minimum, maximum, mean, standard deviation, median, mode, and percentiles will be reported. For both types of variables, the percentages of missing data are reported.

DKAP will address differences between countries to gauge the extent of students’ digital citizenship competency in their own country in comparison with those of other participating countries, and understand relative strengths and weaknesses of their education system. Additionally, DKAP will explore differences in the relationships between contextual variables (such as gender and socio–economic background) and students’ outcomes. The increasing diversity of students’ digital experience (their access to digital devices) participating in DKAP also provides an opportunity to measure the relationship between the characteristics of the educational systems and their respective digital citizenship. A better understanding of these variations will facilitate the translation of results into policy recommendations.

## 3. Data Documentation and Quality Control

Documentation, with a list of the cleaning checks and corrections made in the data, and national adaptations made to questionnaire by each country should be included to enable the ISVP to review the cleaning process as well as national adaptations.

Quality standards are established through comprehensive research manuals and related documents. These were developed in consultation with UNESCO Bangkok, participating countries’ researchers and the ISVP team. An initial draft of this document was discussed at the Regional Researchers’ Meeting in Bangkok on 15-16 March 2018.After a thorough consultation among the meeting participants, the ISVP team and participating countries agreed on the next steps to finalize the research manual.

In addition, national-level documents used by the NRT to record their specific project information and any approved variations to standard procedures should be provided to the ISVP team for quality monitoring. These documents include sampling forms, the translation plan, cleaning check (cleaning process and corrections made in the data) and adaptation forms related to this manual or survey items.

The ISVP team recommends that the survey administration process be monitored in a sample of schools by a DKAP Quality Control Monitor (QCM) visit. QCMs will observe and record any deviations from those agreed procedures during the implementation of the survey. All QCMs will be self-trained by the QCM manuals including research manual and copies of data collection sheets. QCMs are asked to observe the following activities of the survey administrator:

* Distributing, collecting, and securing the survey booklets
* Following the survey administration script
* Making time announcements during the survey sessions

## 4. Limitations

The limitations of this project are as follows:

First, there are some exclusions of population subgroups: school-level exclusions and within-school exclusions owing to the limit of research period and budget. School-level exclusions include schools that are geographically remote; have very few students; have a curriculum or structure different from the mainstream education system; and are specifically for students with special needs. Within-school exclusions include intellectually or physically disabled students including students who are mentally and functionally unable to follow even general test instructions. Non-native language speakers who are unable to read or speak the language(s) of the test are also included in the case of within-school exclusions.

Second, only Korean samples for qualitative research are collected. Some aspects of cultures might not be chosen for representation as the basis of DKAP questionnaire. Accordingly, it is difficult to generalize the results of analysis of qualitative data in the research to the other populations. Other countries can take advantage of the developed qualitative questionnaire if necessary.

# Annex A. Survey Questionnaire References

**A. Digital Literacy**

**1. ICT Literacy**

| No. | Questionnaire | References |
| --- | --- | --- |
| A1 | I can edit electronic resources (e.g., text, graphics, audio, videos) | ▲  ICILS |
| A2 | I use social media platform (e.g., Facebook, Instagram, Snapchat, LINE, We Chat) to share ideas, participate in discussions, and collaborate with others. | ▲  Weiser (2000) |
| A3 | I can set up a safe computing environment (e.g., remove computer viruses, install security programs/antivirus). | ▲  ICILS |
| A4 | I can transfer photos, music, and video files saved on my computer into other digital devices (e.g., mobile phone, tablet PC). | ●  Bunz, U. (2004). |
| A5 | I use computer software (e.g., Microsoft Word, Microsoft PowerPoint, Google Docs) to complete learning tasks at school. | ▲  ICILS |
| A6 | I know how to use the latest digital devices. | ▲  ICILS |
| A7 | I use digital devices in order to search for information and application I need. | ●  Weiser (2000) |
| A8 | I use digital devices for learning at home. | ▲  ICILS |
| A9 | I use digital devices for my personal interest (e.g., games, chatting, shopping, searching for information). | ▲  ICILS |

※ ●: taken from ▲: modified from ■: generated by ISVP

**2. Information Literacy**

| No. | Questionnaire | References |
| --- | --- | --- |
| A10 | I assess the relevance of the digital information to complete learning tasks at school. | ●  Choi et al. (2017) |
| A11 | I can separate reliable from unreliable information when searching for digital information. | ▲  ICILS |
| A12 | I search for and find information to complete learning tasks on the Internet. | ●  ICILS |
| A13 | I know I need to report the source of information when using information attained from online. | ▲  Ribble & Bailey (2007) |
| A14 | If I find wrong information on the Internet, I can correct it. | ▲  Carretero , et al. (2017) |

**B. Digital Safety & Resilience**

**1. Understanding Child Rights**

|  |  |  |
| --- | --- | --- |
| No. | Questionnaire | References |
| B1 | I understand I should show respect to the others on the Internet. | ●  Ribble & Bailey (2007) |
| B2 | I understand I should protect the privacy and security of the others. | ▲  Ribble & Bailey (2007) |
| B3 | Since it is against copyright law to copy software illegally, I would not let myself make a copy. | ●  Wood & Glass (1995-1996) |
| B4 | I read the privacy policy of websites I visit when using the Internet. | ●  Gupta et al.(2010). |

**2. Personal data, Privacy and Reputation**

|  |  |  |
| --- | --- | --- |
| No. | Questionnaire | References |
| B5 | I try to avoid threatening other people's personal information when using digital information. | ▲  ICILS |
| B6 | I try to avoid infringing other people’ intellectual property rights (e.g., software copyrights, portrait rights) when searching for and using digital information. | ▲  ICILS |
| B7 | I try to protect my personal information from others online. | ▲  ICILS |
| B8 | I know which information I should and should not share on the Internet. | ●  Alexander et al.(2015) |

**3. Promoting and Protecting Health and Well-Being**

| No. | Questionnaire | References |
| --- | --- | --- |
| B9 | I find myself using digital devices for longer periods of time than intended. | ▲  Van Deursen (2015). |
| B10 | I use digital devices to relieve myself from stress (e.g. listening to music, watching movies, SNS). | ●  Leung (2006) |
| B11 | I feel anxious if I have not checked for messages or switched on digital devices for some time. | ▲  Van Deursen (2015) |

**4. Digital Resilience**

| No. | Questionnaire | References |
| --- | --- | --- |
| B12 | I can modify privacy setting to keep myself safe/away from unwanted contacts (e.g., spam texts, emails). | ▲  Think Young: Digital Resilience / Alexander et al.(2015) |
| B13 | I try to avoid clicking on information that look weird or suspicious. | ●  Think Young:  Digital Resilience |
| B14 | If a person is bothering me online, I can ask the person to stop sending unwanted disturbing messages or emails. | ●  Think Young:  Digital Resilience |
| B15 | How will you react when you are exposed to unwanted disturbing file or website (e.g., pornography website, violent media)? | ●  Think Young: Digital Resilience / Alexander et al.(2015) |
| B16 | How will you react when you receive unwanted disturbing messages including annoying messages or embarrassing pictures from someone on your contact list? | ●  Think Young:  Digital Resilience |
| B17 | How will you react when you find that your personal information is misused, compromised or acquired without permission online? | ●  Think Young:  Digital Resilience |
| B18 | How will you react when you are bullied online by friends or others? | ●  Think Young:  Digital Resilience |

**C. Digital Participation and Agency**

**1. Interacting, Sharing, and Collaborating**

| No. | Questionnaire | References |
| --- | --- | --- |
| C1 | I use the Internet to talk to people from places or backgrounds different from mine. | ●  GKO Assessment |
| C2 | I use the Internet to share something I am good at or I know well. | ▲  Jones & Mitchell, (2015) |
| C3 | I can share my knowledge online to anyone if it is helpful to him/her. | ▲  Bock & Kim, (2002) |
| C4 | I make new friendships with other people online. | ▲  GKO |

**2. Civic Engagement**

| No. | Questionnaire | References |
| --- | --- | --- |
| C5 | I post news on social issues online (e.g., Facebook, Instagram, blog). | ▲  Warren et al.(2014) |
| C6 | I use the Internet to create solutions to problems in my school. | ▲  Jones & Mitchell (2015) |
| C7 | I use the Internet to create solutions to problems in my town/community. | ▲  Jones & Mitchell, (2015) |
| C8 | I get involved online in social issues. | ▲  GKO |

**3. Netiquette**

| No. | Questionnaire | References |
| --- | --- | --- |
| C9 | If I disagree with people online, I watch my language so that it doesn’t come across a mean. | ●  Jones & Mitchell (2015) |
| C10 | I am careful to make sure that the pictures I post or send will not embarrass other people or get them into trouble. | ▲  Jones & Mitchell (2015) |
| C11 | My favorite online places are where people are respectful toward each other. | ▲  Jones & Mitchell (2015) |
| C12 | I do not add to arguments and insulting interactions that happen on the Internet. | ●  Jones & Mitchell (2015) |

**D. Digital Emotional Intelligence**

**1. Self-awareness**

| No. | Questionnaire | References |
| --- | --- | --- |
| D1 | I am aware of my feelings that I experience in my interactions online. | ▲  Van Deursen et al. (2015) |
| D2 | I express myself in a way that makes a good impression on others when I write a post or comments on SNS (e.g., Facebook, Instagram). | ▲  Van Deursen et al. (2015) |
| D3 | I am aware of the meaning of non-verbal messages (e.g., smiley face, emoji) that I send to other people on the Internet. | ▲  Van Deursen et al. (2015) |
| D4 | I express my feelings freely on the Internet using online communications. | ▲  Van Deursen et al. (2015) |

**2. Self-regulation**

| No. | Questionnaire | References |
| --- | --- | --- |
| D5 | I can manage my feelings when I talk with other people on the Internet. | ▲  Van Deursen , et al. (2015) |
| D6 | Even though I get distracted during online classes or activities, I can easily go back to my work again. | ▲  Van Deursen , et al. (2015) |
| D7 | I can stick on my goals when I use the Internet to do assignment at home. | ▲  Van Deursen , et al. (2015) |

**3. Self-motivation**

| No. | Questionnaire | References |
| --- | --- | --- |
| D8 | I am motivated by the good results that my group can get from the projects that we do online. | ▲  Van Deursen , et al. (2015) |
| D9 | Even though I face challenges while using digital devices, I solve the problem without giving up. | ▲  Van Deursen , et al. (2015) |
| D10 | When I use digital devices or software (e.g., programs, applications) for the first time, I expect I am able to do well. | ▲  Van Deursen , et al. (2015) |

**4. Interpersonal skills**

| No. | Questionnaire | References |
| --- | --- | --- |
| D11 | I communicate comfortably with people who have different backgrounds, appearances, and opinions on the Internet. | ▲  Moely, B. E., et al. (2002) |
| D12 | I help other people feel better when they are not feeling well on the Internet (e.g., when they read negative comments or see awful pictures of themselves posted by others). | ▲  Van Deursen , et al. (2015) |
| D13 | I know how to resolve the conflicts that arise when I interact with people from diverse backgrounds on the Internet. | ▲  Moely, B. E., et al. (2002) |

**5. Empathy**

| No. | Questionnaire | References |
| --- | --- | --- |
| D14 | When I meet friends online, I easily empathize with their emotions. | ▲  Baron-Cohen, S., & Wheelwright. S. (2004). |
| D15 | When I talk with friends on the Internet, I can understand their perspectives even if I disagree. | ▲  Baron-Cohen, S., & Wheelwright. S. (2004). |
| D16 | When I meet friends on the Internet, I easily recognize what they want to talk about. | ▲  Baron-Cohen, S., & Wheelwright. S. (2004). |

**E. Creativity & Innovation**

**1. Creative Literacy**

| No. | Questionnaire | References |
| --- | --- | --- |
| E1 | I make changes to the digital contents (e.g., photos, videos, music, text, etc.) that others have produced. | ▲  Van Deursen , et al. (2016) |
| E2 | I remix existing digital contents by using digital media software (e.g., programs, applications). | ▲  Inception paper |
| E3 | I create presentation slides to support my ideas or opinions. | ▲  Somerville, et al. (2008) |
| E4 | I create something new from existing digital contents. | ▲  Van Deursen , et al. (2016) |
| E5 | I express my ideas through selecting, organizing, and sharing existing digital materials. | ▲  Inception paper |

**2. Expression**

| No. | Questionnaire | References |
| --- | --- | --- |
| E6 | I use the Internet to try out different ways of expressing myself. | ▲  Davis, K. (2013) |
| E7 | I express my personality online. |
| E8 | I show a better version of myself online. |
| E9 | I express who I want to be online. |
| E10 | There are certain things I express about myself more freely online than offline. |
| E11 | When I’m online, I present myself how I want others to view me. |

# Annex B. Back-translation Form

The following table should be filled-out and sent to ISVP and UNESCO Bangkok for review:

|  |  |  |  |
| --- | --- | --- | --- |
| **Item Number** | **Original (English)** | **Translation**  **(Test language)** | **Back-translation (English)** |
| A1 | I can edit electronic resources (e.g., text, graphics, audio, videos) |  |  |
| A2 |  |  |  |
| … |  |  |  |
| … |  |  |  |
| … |  |  |  |
| … |  |  |  |

# Annex C. School-Related Information Questions

* School size: Number of students in school and in grade surveyed
* School location: Size and type of community in which the school is located
* School SES: Percentage of students from economically disadvantaged homes
* School type: Public or private
* Proportion of girls enrolled at school
* Availability of computers
* Availability of the Internet at school
* Quantity of teaching staff at school
* School ICT-related curriculum: Whether school has ICT-related classes or not

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