



INCLUsive Disaster Education (INCLUDE)

Framework Validation Synthesis Report

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Introduction

Following the proposal for a novel framework for re-imagining DRR online education that is learner-center and responds to the emergent needs and particularities of the field, a methodology for its validation was developed. The validation background from Stake's (1967) "Congruence-Contingency model" for evaluating educational programs proposes a set of questions that are considered important and relevant for the framework's validation re-evaluation and further development in the context of DRR. After the development of six fundamental questions revolving around the principles of the proposed framework and in line with Stakes's distinction of antecedents, transactions and outcomes, a series of interviews and focused group discussions were conducted with educators from the project partner organizations. In total 13 interviews were conducted, 4 with educators from the University of Huddersfield, 5 from Lund University, 2 from Keio University and 1 from the University of Central Lancashire. This report is a synthesis of the responses provided for each of the validation questions and their components divided into sections according to Stakes's approach.

Antecedents

Question 1: How can it be ensured that the framework is in line with the principle of readiness and take into consideration different scenarios where it will rapidly have to be re-adapted as in the case of in-classroom education and the disruption from COVID-19?

A common theme that emerged through the validating interviewees was the different approaches but also a certain degree of concern regarding the principle of readiness. To begin with, it was recognized that the framework's readiness principle should concern three aspects, the educator, the learner, and the system itself while being locally specific. When it comes to the learners it is important to consider the capabilities, willingness, and attitude of students as the framework is set to be learner

oriented. Some interviewees pointed out that the system is perhaps the most challenging aspect to adapt to sudden changes.

Although it is recognized as a significant principle for the framework, concerns were raised on how the principle could be applied in a real-life disruptive scenario like the COVID-19 case. Contingency plans for parts of the framework to be shifted online and flexibility in the distribution of teaching activities were brought up as a response to the readiness principle. Contingency plans can be drafted for those parts that are easier but also for the parts that are more challenging to shift. And while theoretical components of courses can be covered online, through for instance online lectures, there needs to be a different approach to the practical ones, ensuring deep learning AR and VR complemented by students' smartphone use was a suggestion regarding this. Disruptive technologies were considered an asset that could also assist. Flexibility was highlighted to be an important principle not only in times of disruption but also during normal times.

On the other hand, interviewees stressed the importance of considering that an adaptive approach will not always work for individuals and is dependent on several external factors that are not usually easy to find an adaptive solution to, such as the quality of the internet connection. So even if there is a plan to shift lectures towards an online environment or resources have been diverted into creating an online platform for sharing and interacting, disparities in the use of these innovative approaches are likely to persist.

Question 2: How can a process of co-creation be ensured? What are the preconditions so that students and educators equally participate in the co-design of an online framework for DRR?

Interviewees suggested several methods and techniques to ensure an environment of co-creation suggesting a departure from conventional learning techniques and highly relying on novel tools for enhancing the learning experience. More specifically, breakout rooms, zoom polls and peer discussions were mentioned as tools that can assist in the above efforts. The Moodle Platform was also considered a tool for more efficient

dissemination of content in comparison to a face-to-face environment. Students' own experiences and skills were also seen as vital to the improvement of the learning experience when shared for co-creation purposes. Co-created Q&A pages by students and teachers were another method suggested to enhance the co-created character of the framework.

On the other hand, some interviewees questioned the applicability and feasibility of co-creation processes especially when the students have no extensive experience in the field, arguing that most learners who are at the same time professionals can generate adequate feedback that can be further utilized to co-create modules and more specific parts of them such as simulation exercises. Also, the potential individual barriers of students in sharing their knowledge and feedback due to reluctance and shyness was considered a common barrier that could be overcome through anonymous comment posting sections in CMOOCS environments. Additionally, inclusive learning techniques are considered important for the generation of a co-creative environment.

Transactions

Question 3: How does the proposed framework address the inclusivity issues that were observed during the COVID-19 period and how accessible is it to various groups of students?

Interviewees emphasized the need for the operationalization of the term inclusivity in practice while recognizing its importance as a core principle of the proposed framework. It is important not only for the framework to incorporate the idea of inclusivity but also for the courses to be inclusive. An example was brought up regarding students with mobility disabilities and soil sampling in the context of landslides, suggesting that educators could come up with simulation models for such cases. AR and VR can be of use for this purpose. Significant emphasis was placed on the various types of learners, confirming the need for a student-centered perspective on learning, considering both visible and less visible or invisible disabilities, and considering individual and systemic capacities, such as infrastructure capacity. At the same time, the wider use of easy-access tools such as combined use of general-purpose online

communication tools such as Zoom, Slack, Google Workspace, and GitHub as well as other licensed software could improve an online learning environment and enhance inclusivity.

Flexibility can also be a factor in addressing inclusivity issues by considering which parts of the modules need to be mandatory and which are not and creating a flexible environment between online and face-to-face modules or lectures. One interviewee suggested that inclusivity cannot be only addressed by educators but there needs to be extensive cooperation on a national level for strategic planning to create an enabling environment as well as a careful selection of course participants bearing in mind that a potential disruption will occur, and no one has to be left behind when that happens. Finally, an important point was brought up regarding the use of computers or laptops and smartphones. Although not all students have access to a computer, the majority use a smartphone. Bearing this in mind, planning modules centered on smartphone applications could enhance the learning experience and generate a more inclusive environment for distance but at the same time for in-classroom learning.

Question 4: Incorporating successful practices is key to the constant improvement of the framework for online DRR education. Where can we seek those successful practices and how can we adapt them to the context of DRR education? What are the main constraints in this process and how can they be overcome?

The responses to this question can be seen as both complementing as well contradictory in some cases. In line with the co-creative and inclusive character, some interviewees highlighted that successful practices can be extracted from the experiences of both educators and learners. Educators need to communicate with other educators from different institutions, creating a lively community of practice exchange. Many of the interviewees highlighted the significant role of educators in contributing to the dissemination of new knowledge by having access to research findings, valuations, or other grey literature where best practices can be compiled and shared with the students.

Others went on to identify successful practices and lessons from the COVID-19 period such as an online conference that brought together people from the DRR community from all over the world. They also highlighted the potential of the Metaverse space and its applicability to DRR education, mentioning the example of

creating a CG space in Metaverse for simulating the construction and management of an evacuation space. This once again highlights the potential of AR and VR for the continuous improvement of educational frameworks in the face of potential disruptions. The use of “Mapathon” (OpenStreetMap map data maintenance using the crowdsourcing method) with overseas communities was also brought up as another successful practice that could be further utilized.

Several challenges were highlighted regarding the integration of successful practices and their adaptation in DRR education. Relating to the knowledge exchange between educators, a main constraint was connected to time and resource limitations. Some other interviewees distinguished challenges into those that are language-related such as providing content to accommodate both English and non-English speakers, student engagement, and student interaction such as Zoom breakout rooms and group presentations through zoom. Significant limitations to adapting successful practices relate to technical aspects as highlighted by interviewees, such as internet connection or even laptops and PCs as mentioned previously. The need for the development of manuals was also discussed as something that is lacking and needs further consideration.

Outcomes

Question 5: What are some key indicators to measure knowledge and skills and how can they be balanced in an online setting?

This question proved to be more challenging for the interviewees who came up with a variety of answers emphasizing that this is highly dependent on the aims of each module and that skills are easier to measure perhaps than knowledge. In line with this latter perception of the gap between knowledge and skills, some interviewees indicated that knowledge is something that can be given, while skills are something to be developed but significantly hindered by the online setting.

Other interviewees were more specific about criteria and indicators for assessing knowledge and skills obtained, describing them as evaluation standards, such as the

availability, openness, and transmissibility of data. GitHub was suggested as a useful open-source tool. Other tools for assessment were questionnaires and self-evaluations to learners and educators, the content of students' reports. The evaluation by multiple teachers as well as the integration of AR/VR in the evaluation efforts was also suggested by several interviewees. Evaluation ought to be carried out immediately after the experience but also several months after the experience to consider whether the content is adequately understood by learners.

Internship courses were suggested as another means to exercise and assess knowledge obtained and skills acquired during modules. Through internships, educators could have the ability to test and evaluate how learners would address tasks and situations in real life. Interviewees highlighted that this can be one way to address the gap between knowledge and skills.

Question 6: Keeping in touch with all the recent developments in DRR when it comes to new conceptual and technological advancements (disruptive technologies) might be a challenge. How can both students and educators be up to date on recent developments as a precondition for their further and successful integration in educational programs (both in an online and in classroom setting)? and how can we measure the degree of integration of new developments at the end of each evaluation cycle of the framework?

In this section, many interviewees focused on the recent AI developments as well as in general concerning disruptive technologies and their implications for the field of DRR and distance education. As discussed in Output 02 and Output 04, it was confirmed by interviewees that disruptive technologies such as UAVs, Big Data, AI and VR have the potential to transform the field of DRR and can be integrated into educational programs in two ways, as an end goal of courses (e.g. to learn more about the use of drones in DRR) but also as means to improve the learning experience by making it more trans-disciplinary and interactive. However, as demonstrated in the interviews preceding Output 01, there is an evident lack of familiarity with disruptive technologies among educators. There were mixed opinions on the integration of chat GPT, with some

interviewees calling for developing assessments based on chat GPT. In general, there was a more balanced approach to the integration of new technologies, with most of the interviewees suggesting a mix of traditional and disruptive technology pedagogical approaches. The evaluation of the integration of disruptive technologies can be done by assessing learners' experience in real life for instance when encountering an actual disaster and how they coped in the context of their work. Another proposed way for evaluating the integration of disruptive technologies was rather than only judging it as a success or a failure, to investigate whether the process (log) of the work that incorporates disruptive technology is objectively recorded, whether it is organized and recorded in a GitHub repository in an easy-to-understand manner, or whether it is disclosed without making it confidential.

The majority also emphasized how challenging it is to keep up with all the recent developments in the field of DRR mentioning the example of time constraints both for educators and learners. Some way of improving relevance with new developments is the development of networks of communication between practitioners through which they can be kept up to date by making use of personal connections. Learners can also be part of this process. One way to do so is by researching and presenting new developments of their interest as part of modules.

Conclusion

The educators who responded to the validation survey and the proposed validation questions came up with innovative approaches to each section. At the same time, they maintained a critical point of view both when it comes to the structure of the framework and the validation as well as the content of each validation section. Some general patterns identified through the responses to the validation survey highlighted the importance of flexibility and readiness of the framework while stressing the practical and structural challenges for ensuring a flexible and inclusive environment in the face of a future disruption. Disruptive technologies were raised as a significant contributor to the above, however, it is equally important to acknowledge the deficits

of fully incorporating disruptive technologies and especially the fuse of AI in educational frameworks and modules. VR was considered an important asset for enhancing flexibility and inclusivity.

What is more, emphasis was placed on the parallel and balanced development of skills and knowledge by learners, bringing attention to the importance of the educators' role in the evaluation process and the creation of relevant indicators. The fundamental framework element of co-creation was brought up several times both in highlighting its importance, and at the same time for raising concern on how educators and learners can equally collaborate in the co-production of the framework beyond feedback. A framework such as the proposed one is constantly developed through an ongoing interaction with its environment, in other words the rapidly evolving field of DRR. Perhaps the element of co-creation cannot be more evident than in the way new developments can be incorporated into DRR modules through the active involvement of both educators and students who will bring new knowledge and skills to the table.