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# INTERACTIVE DESIGN OF COLLABORATIVE ART PROJECT FOR 21ST CENTURY LEARNING

Jasmina Maric
*The Swedish School of Library and Information Science, Sweden*

**ABSTRACT**

While many of us researchers dream about the opportunity to design a collaborative art project that would connect our youth with big, mainstream cultural and educational institutions, we seldom analyse the challenges of such collaborations. This paper presents the user-centered, interdisciplinary interaction design (ID) of the collaborative digital art project. The project design is made in collaboration with the young participants of the Meet the Ministry project run by the Dance Company of the Opera House (DCOH) in Gothenburg, and the members of The Swedish School of Library and Information Science Social Media Studies (TSLIS) research group. Using the research through design approach to augment the outreach of the collaborative digital art project, enhance youth engagement with the contemporary dance, and learn from the young participants, we analyze the implications introduced by inter-institutional and interdisciplinary collaboration. This paper proposes a view which suggests that learning can be effective and pure joy, while at the same time delivering 21st-century skills to those who learn, and new conditions for social inclusion and sustainable society. One argument is that we need new teaching approaches to successfully prepare our youngest for the 21st century. The other reason is that we would be better off if the investments in our public institutions could positively influence a larger society, which would result in a more sustainable society. Drawing from the different scientific research experiences this paper calls for interdisciplinary and interinstitutional collaborative art projects as learning tools, and tools to leverage social sustainability.

**KEYWORDS**

Interaction Design, User-Centered Design, Collaborative Art, 21st Century Learning, Super Skills, Interdisciplinary Collaboration

## 1. INTRODUCTION

Over the past decades, scholars have shown that we live in a society based on constant and rapid change, while the technology rapidly substitutes manual labor, studies increasingly indicate a need for creative and innovative workers (Voogt et al. 2013). As Bauman (2000) calls it, we live in the era of *liquid modernity* (Bauman 2000). To hold information-age jobs, employees

must be capable of deep thinking, solving problems in creative ways, working in teams, communicating clearly in cross-cultural and in cross-media settings, constantly learning ever-changing technologies, and dealing with a flood of information (World Economic Forum 2015). Current education systems and approaches are under heavy pressure by business and political leaders to develop skills such as problem-solving, critical thinking, communication, collaboration, and self- management, which should enable students to achieve their full potential as adults (Pellegrino & Hilton 2013). As educators, we are particularly sensitive to this pressure, trying to find the best pedagogical approaches which would result in students developing the knowledge of "most worth" (Kereluik et al. 2013).

Simultaneously, while thinking and believing that that solidarity "remains a central dimension of cultural, institutional and interactional life in contemporary societies" (Alexander, 2014) one must agree with (Kymilcka, 2015) that today's social theory has tried to make solidarity disappear.

> *Modernization is thought to have smashed affectual and moral fellow-feeling: be- cause of commodification and capitalist hierarchy (Marx), because of bureaucracy and individualistic asceticism (Weber), because of the growing abstraction and im- personality of the collective consciousness allows egoism and anomie (Durkheim). Postmodernity is typically seen as liquefying social ties and intensifying narcissistic individualism (Baumann); or as creating new forms of verticality, for example, the disciplinary cage (Foucault).* (Alexander, 2014, p. 303)

In such a postmodern world arriving at the opportunity to cooperate across disciplines - science and culture, create cross-institutional networks - universities and large cultural institutions, in order to explore solidarity and collaborative efforts against narcissistic individualism or disciplinary cage is almost impossible to realize. Even though the local government(s) would largely profit from successful interdisciplinary and interinstitutional solidarity and collaboration, it is a well-known fact that so many well- meaning attempts fail to deliver palpable results (Brown et al., 2015).

However, this paper proposes a view that teaching and learning 21st-century skills could be very effective and joyful endeavor if it is delivered through an interdisciplinary and inter-institutional collaborative art project. Before we arrive at the proposed model that caters to the acquisition of 21st-century skills, we should first have a look at the present to understand what we have achieved so far.

## 2. 21st-CENTURY SKILLS ACQUISITION

In recent years many authors converge around the idea that educational demands of this new century require new ways of thinking and learning. Clearly, the new media era introduced the need for change in education. Starting from the ideas that suggest that today's students are fundamentally different from students in the past (Prensky 2001), suggesting that our current educational practices developed for Industrial Age are not catering for the needs and demands of Information Age (Prensky 2001; Robinson 2001; Corrigan 2013; Reigeluth 2016). Even so, there is no consensus reached on what 21st- century skills are. Yet, the consensus is reached on accepting that our world changes over time, so education must change, and evolve, too. But what are 21st-century skills?

Based on several hundred interviews with business, non-profit, and education leaders, Tony Wagner (2008) proposed seven *survival skills* that students need:

1. Critical thinking and problem-solving;
2. Collaboration and leadership;
3. Agility and adaptability;
4. Initiative and entrepreneurialism;
5. Effective oral and written communication;
6. Accessing and analysing information; and
7. Curiosity and imagination.

Wagner's survival skills were just one of many attempts that aimed at better understanding and defining of the new skills. Looking at several major frameworks in the 21st-century learning field, Lai and Viering (2012) acknowledge many overlaps in frameworks' terminology where critical thinking, collaboration, creativity, motivation, and metacognition are the most frequent terms.

Another attempt to comprehend what knowledge is of most importance in the context of 21st-century skills was published by Kereliuk et al. (2013). In order to arrive at a comprehensive overview of what is meant by 21st-century knowledge, skills, and learning, the authors have chosen 15 reports and books to compare different perspectives. Kereliuk et al. (2013) identified three broad categories with three subcategories within them. The three broad categories are Foundational Knowledge, Meta Knowledge, and Humanistic Knowledge. Finally, each category constitutes different realms of knowledge, as Figure 1 demonstrates.

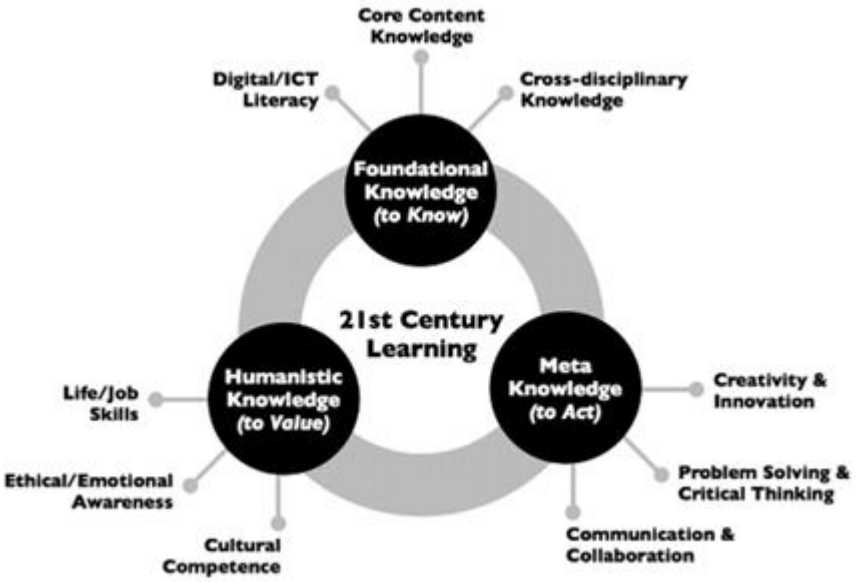


Figure 1. Synthesis of 15 different 21st-century learning frameworks (Kereliuk et al., 2013)

Identifying converging theories on 21st-century skills is just the first step in the process of acquiring skills. According to Saavedra and Opfer (2012), the way we learn 21st-century skills is a much deeper problem which requires 21st-century teaching. Proposing that some consensus about what 21st-century skills are, and how they can be acquired, is reached, Voogt et al. (2013)

are in line with Saavedra and Opfer (2012) arguing that strategies for 21st-century skills are frequently not well implemented in current educational practices. In order to better prepare students Saavedra and Opfer (2012) offer tips for educators:

1. Make it relevant
2. Teach through the disciplines
3. Develop thinking skills
4. Encourage learning transfer
5. Teach students how to learn
6. Address misunderstandings directly
7. Treat teamwork as an outcome
8. Exploit technology to support learning
9. Foster creativity

Regardless of the skills included or the terms used to describe them, all 21st-century skills definitions are relevant to aspects of contemporary life in a complex world. Research contributions usually conclude with a range of practical recommendations for the implementation of 21st-century competencies, such as integration of 21st-century competencies in curriculum and assessment, strategies to adopt innovative teaching and learning practices by focusing on problem-solving and ICT literacy. It is generally agreed across the different frameworks that collaboration, communication, digital literacy, citizenship, problem-solving, critical thinking, creativity and productivity are essential for living in and contributing to our present societies. These abilities are also commonly referred to as higher-order thinking skills, deeper learning outcomes, and complex thinking and communication skills. In recent pedagogical publications, these skills are called 4Cs or *super skills* for the 21st century: Creativity, Communication, Critical Thinking, and Collaboration (Kivunja 2015).

The broad agreement is reached on what these 21st-century competencies are and how they can be learnt. In the next subsection, we discuss teaching practices within the analysed teaching program to explore what is missing in facilitating 21st-century skills acquisition.

## 2.1 What is Missing in our Teaching for 21st-Century Skills?

To comprehend how our teaching practices cater to 21st-century skills, students' super skills are tested (Maric, 2019). Through this study, we identified six problems faced by students. They read as follows:

1. Interdisciplinary knowledge transfer difficulties - students fail in applying the knowledge interdisciplinary,
2. Cross-cultural settings uneasiness - students are not feeling comfortable in cross-cultural settings,
3. English reading difficulties - students need longer time to read and understand than average non-native reader needs,
4. Safe group work settings preference - if working groups are randomly arranged by lecturers, or by a software, a certain level of uneasiness is expressed,
5. Uncomfortable with spontaneous verbal argumentation, and
6. Avoidance of honest peer assessment - although the literature suggests that there are advantages in peer reviewers being identified because students need to learn to give each other honest and constructive feedback, it seems that our students are not well prepared to make critical and constructive comments when they are not anonymous.

If we put together the synthesis of 15 different 21st-century learning frameworks (Figure 1), with the six problems faced by students, it seems that there is a discrepancy between skills demonstrated and skills needed for 21st-century working environment (see Table 1).

Table 1. Six problems faced by students distributed in Kereliuk et al.'s (2013) model (Maric, 2019)

| Kereliuk et al.'s synthesis model | | Six problems faced by students |
|---|---|---|
| Foundational Knowledge (to Know) | Digital/ICT Literacy | |
| | Core Content Knowledge | |
| | Cross-disciplinary Knowledge | *Interdisciplinary knowledge transfer problem* |
| Humanistic Knowledge (to Value) | Life/Job Skills | |
| | Ethical/Emotional Awareness | |
| | Cultural Competence | *Cross-cultural settings uneasiness*<br>*English reading difficulties* |
| Meta Knowledge (to Act) | Creativity and Innovation | *Avoiding honest peer assessment* |
| | Problem Solving and Critical Thinking | *Uncomfortable with spontaneous verbal argumentation* |
| | Communication and Collaboration | *Safe group work settings preference* |

If we now go back to Kereliuk et al.'s (2013) synthesis visualization (Figure 1) and mark the six problems faced by students as they are distributed in the Table 1., we arrive at a visual representation of missing 21st-century skills (see Figure 2). The orange arrows in Figure 2 point to the area of Kereliuk et al.'s (2013) visualisation where missing 21st-century skills are identified.

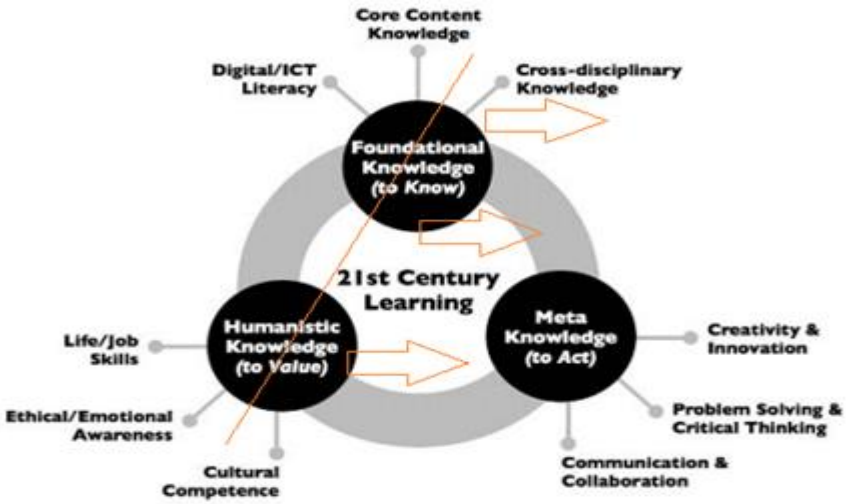


Figure 2. Missing 21st-century skills

In the next section, we offer an example from praxis and recommendations for addressing this important pedagogical dilemma.

# 3. WHEN INFORMATION SCIENCE MEETS ART

A couple of years later (2018), Opera House Dance Company (OHDC) in Gothenburg hosted Meet the Ministry project. The aim of the project was to create knowledge about reach-out and engagement with a young audience (16-19 years). The starting idea was to introduce the contemporary dance process to the youngest audience through a series of off-line workshops with members of OHDC. However, when OHDC members met with us, members of the Swedish School of Library and Information Science (TSLIS), a new idea was born. Knowing that members of Generation Z (born between 1996 - 2010; Turner, 2017) hang out, learn on and through social media (Ito et al., 2019), and interact with friends and family through digital channels, much more than other generations (Dreaon et al., 2011; Kick et al., 2015) we have proposed including a digital communication too. To arrive at a better understanding of young people's everyday communication practices, we argued for interdisciplinary and interinstitutional collaboration where we can make the most out of it. In such a rare opportunity to collaborate across disciplinary boundaries, we were in a unique position to test the power of collaborative all-digital art, and juxtapose it to the effects of all-physical art on learning and social capital acquisition. Or, even better, to test what happens in a synergy of all-physical and all-digital art creation process.

Finally, a joint venture between OHDC and TSLIS is created. Through the exploration of contemporary dance choreography creation for Ministry of Unresolved feelings dance show, delivered in a series of all-physical workshops, young participants are invited to engage in all-digital storytelling creation in order to share their impressions about the whole process.

## 3.1 A Method Used

Believing that there is no only one common definition of design (Franker and Racine, 2010), in this paper, design is considered as an activity for planning and executing new actions, which might include deliverables as a by-product of the process (drawings, models, plans, or events). The core idea of the Meet the Ministry project is to learn from the young participants, users that are at the same time designers of the process. In other words, the methodological process is inspired by human-centered Scandinavian participatory approach where design researchers collaborate with the people who are being served by design as co-creators in the process (Sanders, 2008).

During a series of meetings between the DCOH and TSLIS, the goals of the project are defined, as well as the necessary steps to arrive at the best possible results. The goals read as follows.

1. Create the process in which we can learn from the young participants - creating knowledge;
2. Leave the process open so it can be re-designed or changed according to participants' needs;
3. Find ways to communicate with young participants and hear what young participants have to say;

4. Learn from the participants' feedback and reiterate the process design;
5. Provide the tools, material, that will support better communication; and
6. Document the process and analyze results.

Young participants were recruited (August 2018) based on their motivation letters. They answered the surveys coupled with personal interviews, before the project start, and after the project was over (June 2019). That way they were given a chance to evaluate the project, express their feelings, and ideas about the project. Also, we have followed their participation through the whole process through the observation method too. In praxis, each physical workshop with participants was followed by an evaluation meeting where all parties would discuss the results of the workshop and future moves. We can say that the design process was a set of ongoing iterations, comprising continuous analysis, feedback, and the designing of the next workshops.

## 3.2 The Young Participants

Unlike traditional notion of the *user*, a person who is using specific software solution or service (Downing et al., 2000), in complex interdisciplinary collaborations it is not easy to define the *end-user*. The complexity comes from the fact that a person that is to *use* is at the same time is the person that *designs* the process. However, in this paper we look at the young participants as the *end-users* and *co-designers* of the ID. But how much do we really know about young people between 16 and 19 years old?

The young participants of this project are often characterized as having high digital literacy, multitasking skills, and who operate fast. They are heavy users of smartphones, going online daily, with 24% of them reporting being online constantly (Flora, 2018). After Turkle (2015) argued that due to such heavy technological usage we lose the fabric that makes us human - the ability and interest to understand each other - many publications followed arguing that smartphones have ruined the life of millennials. According to that body of research millennials are not sleeping well, when learn they lack concentration, engagement and socialization (Karakas et al., 2015). However, according to a more recent publication younger millennials, or generations Z, seem not to be ruined at all (Flora, 2018).

In such high uncertainty climate, not really knowing who our youngest partners are, and how they like to do things, it was quite difficult to design the interactive process that could resonate with their needs. To start with, we have looked at 17 motivation letters from which we could learn more about their motivation to join the project, and we run the survey to get to know them better. Here is what we found out.

They all live in different parts of Gothenburg, but they frequently visit the city center. The majority of them are native Swedish language speakers, and they are mostly interested in sports, performing arts, music, and reading. They are not interested in TV at all, while only one person expressed interest in computer games. When asked to explain their motivation for participating to Meet the Ministry project, they use the following expressions: "inspiration", "learning more about the dance", "personal development through creation", "be more in Opera House", "meeting other people", "leaving my personal shell", etc. Finally, in majority they do not have any expectations then to create something "beautiful", "cool", or maybe learn more about themselves and the others.

In order to understand up to what extent the participation in the collaborative art production project could positively affect bridging social capital, a series of questions addressed young participants' daily activities, and perception of their role in the community before the start of the Meet the Ministry project. The questions were designed in line with Williams' bridging social capital scale (Williams, 2006). Based on 12 answers (out of 17) one can argue that those who answered the survey are in majority outgoing persons, who like to cooperate with other people and are quite interested in what other people think or do. Furthermore, they expressed belief that the cooperation with the others brings new contacts and gives a feeling of being better connected to the outer world. It is clear that while explicitly saying they do not expect much, on an implicit level they have come to the Opera House expecting amazing experiences. This fact was an additional burden on the whole project, as well as on us who are designing according to participants' needs.

During the workshops with their digital storytelling mentors, TSLIS researchers and Göthenburgo (local NGO), young participants developed a strategic plan for Meet the Ministry project outreach (Table 2).

Table 2. Digital outreach strategy developed by young participants

| No | Type | Content | Video | Audio | Text | Quantity | Length |
|---|---|---|---|---|---|---|---|
| 1 | web series | - trailer<br>- costume<br>- Rehearsal Director<br>- Choreography/er<br>- improvisation<br>- dance workshop | x | x | | 5-6 | 2-4,5 min |
| 2 | close-up | participants story on<br>- why/how come I am in this project?<br>- what did I get from it?<br>- how we should do this in the future? | x | x | | each participant | 2 min |
| 3 | interviews | interview with the dancers, from a different point of view | x | | x | | |
| 4 | unresolved feelings | unresolved feelings are gathered in mail | x | x | x | | |
| 5 | spontaneous reactions | post spontaneous reactions after each workshop with #motministeriet | x | x | x | | #instagram |
| 7 | webpage on Opera.se | follow up of the process | x | x | x | | |

The complexity of this interinstitutional and interdisciplinary collaboration is presented in our previous work (Maric, 2019). Here, in the following subsection we present the results only.

## 3.3 The Results

In this paper, we won't debate of many conflicting situations that come with interdisciplinary collaborations (Briazu, 2017). It is a well-known fact that stepping into the unknown is not comfortable professional arena. However tempting, interesting and desirable such collaboration could be, it is quite difficult to create the processes that will engage many people across different departments within the collaborating institutions. With so many unknowns in one project idea, like designing interaction for the unknown project participants, designing open ID process that can adapt to future participants' needs, create space for process design re-iteration, open new space for unknown participants' digital interaction, support collaborative art expression, etc., fear becomes an everyday companion[1].

The following challenges are identified: time, management, language, power and ownership, fears and trust. Due to many challenges and limited resources it was not possible to achieve everything that was planned.

Table 3. presents what young participants managed to create during the project.

Table 3. What is produced during the project

| No | Type | Content | Video | Audio | Text | Quantity | Length |
|---|---|---|---|---|---|---|---|
| 1 | web series | - trailer<br>- costume<br>- Rehearsal Director<br>- Choreography/er<br>- improvisation<br>- dance workshop | x | x | | 5-6 | 2-4,5 min |
| 3 | interviews | interview with the dancers, from a different point of view | x | | x | | |
| 4 | unresolved feelings | unresolved feelings are gathered in mail | x | x | x | | |
| 7 | webpage on Opera.se | follow up of the process | x | x | x | | |

However, many lessons are learned. Here, we briefly list the results from three different perspectives, young participants', OHDC's, and TSLIS'.

### 3.3.1 Young Participants

The great majority of young participants who answered the final survey emphasized that the participation in the Meet the Ministry project was:

[1] More about this project can be found in Maric, J. (2019) The Challenges of Designing the Interaction Design of a Collaborative Art Project, www/Internet, Sardinia 2019 proceedings

1. they have learned a lot – both about the contemporary dance and digital storytelling (lärt, Figure 3)
2. really inspiring, interesting (inspirerande, roligt Figure 3),
3. they have made a lot of new contacts (fått, människor, Figure 3).

On the explicit level, they express positive feelings about being able to learn more about contemporary dance, but also experiment with digital storytelling. Even though they repeat they did not have any expectations from this project, in majority they were positively surprised. The participation in the workshops in the Opera House gave them a "*wow feeling*" and influenced their feeling of being closer to the Opera House.

By using their qualitative feedback we have created a word cloud that clearly depicts their feelings and goes in line with the survey results.


Figure 3. Young participants' feedback world cloud

Almost all of them would participate in a similar project in the future, and would recommend such projects to their peers. On the implicit level they say that it was interesting to talk with so many people from other countries (OHDC is international), cooperate with people of different age and professions, and be in situation to use English language frequently. Still, it is important not to forget that some of the young participants felt confused and would prefer better communication and organisation. Also, out of starting 17 participants only 12 finished the project. Unfortunately, in the frame of this project it was not possible to go deeper in analysis of the reasons for dropping off.

### 3.3.2 OHDC

With this project the Opera House not only sparked a new way of thinking about how to engage with the youngest audience, but also challenged many internal traditional concepts. Here we only briefly present identified challenges from perspectives of (1) dancers', and (2) DCOH management.

1. A majority of the dance professionals found the project frustrating and not clear enough, wishing they had a better understanding of the goals. Paired with the traditional lack of time which was also reported in this project, resulted in frustrating *"too many cooks"* and a *"reinvent the wheel"* atmosphere. Dancers report feeling good while doing workshops with the young participants but they wish the whole project was more structured and better organized. Still, they report being quite happy for making closer contact with the youngest audience.
2. The management of DCOH and people responsible for the organization of the project agree that the project was rich and valuable pilot, where they learned a lot about themselves and young participants. Acknowledging that the project was at the same time quite successful and challenging for their internal organization and their traditional usage of digital communication, they perceive it as extremely *"exclusive"* for engaging, finally, only 12 young people. OHDC express ambition to continue exploring this model in the future aiming to increase the number of engaged young participants and improve the reach out by more appropriate usage of digital communication. They list the following issues as the most important focus for future projects of this kind: strategic decisions on "*becoming digital"*; tighter and timely collaboration among internal departments; more time to prepare and plan; a need for better internal and external communication; improve the process and reiterate; and find ways to make a better usage of ICT.

### 3.3.3 TSLIS

For us, researchers, this project was a very interesting way to learn too. Here again, we only briefly list the most important findings.

1. The power of user-centered interaction design - When the user is also the designer of the interaction design we not only increase functionalities and project quality, we at the same time empower the user, the one who is to be affected by the interaction design, by offering the opportunity to influence the design (Simonsen and Robertson, 2012; Kale, 2017). Still, we must not forget that such efforts are costly and require a lot of resources and time.
2. Collaborative art projects seem to be successful tools for social innovation and interdisciplinary learning –
    a. On a social innovation level, collaborative art projects enable acquisition of bridging social capital too. We should keep this important lesson in mind, and be more careful when we recruit participants, if, for example, we are to test such projects for social integration and empowerment.
    b. Furthermore, this project is a fine example of the power of experiential, enquiry based learning where project participants not only learned much about the contemporary dance (explicit level), but at the same time (implicit level) learned new digital skills through creativity and innovation, applied knowledge across disciplines, and all through constant communication and collaboration across different cultures. In other words they learn 4Cs – creativity, communication, critical thinking, and collaboration, i.e. 21st century skills (Kivunja, 2015), through 5Es from real-life: experience, engagement, exploration, evaluation, and elaboration (Figure 4.).

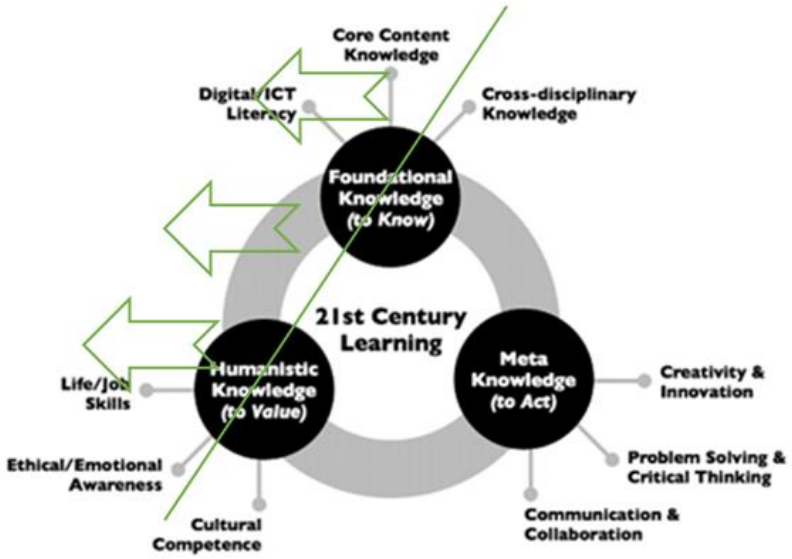


Figure 4. Covering 4Cs through 5Es in interdisciplinary interinstitutional collaboration

3. Interdisciplinary interinstitutional collaboration - when two public interdisciplinary institutions meet for an open collaboration they both profit from it while making the societal investments more effective. In collaborations across disciplinary boundaries each institution profits from the resources of another discipline/institution (new spaces, expertise, new perspectives, learning, etc). One of the most important lessons learned through this project collaboration is that interdisciplinary inter-institutional collaboration augments social impact and learning. If we look at it from the perspective of the national governments who are traditional owners and funders of these institutions, it is easy to understand why and how inter-institutional collaboration leads to a more sustainable society.
   In the next section we propose a model based on findings presented in Sections 2 and 3.

## 4. COLLABORATIVE ART FOR 21ST CENTURY LEARNING MODEL

If we know put two the conclusions on 21st century skills learning, presented in Sections 2 and 3, next to each other, we can arrive to another interesting conclusion or at least a vision for a future learning (Figure 5).

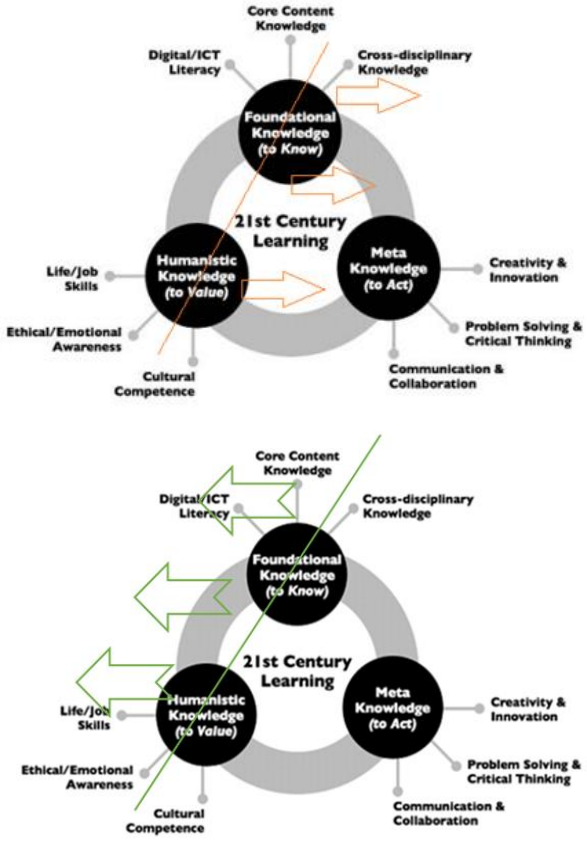


Figure 5. Juxtaposing 21st century learning from different projects

From Figure 5. it is quite easy to see that what we usually miss in our traditional education, cross-disciplinary knowledge, creativity and innovation, communication and collaboration, problem solving and critical thinking, and cultural competence (presented on the left hand side drawing) could effectively be covered if we opt for carefully planned interdisciplinary and interinstitutional collaboration (right hand side drawing). In other words, if traditional higher education public institutions that teach science, like TSLS in this case would collaborate with cultural public institutions, like OHDC in this case, we might have a powerful teaching/learning model for 21st century skills acquisition, social capital acquisition, and a road towards more sustainable society. Here is what we can achieve.

We are all aware that we need much better response to rapidly changing conditions in higher education where we must shift away from a traditional mindset of teaching only for core content knowledge (Kivunja, 2015) and through one unique discipline. Even more, our education needs new perspectives and policies that can help in combating challenges in the development of a more sustainable society (Ng, 2019). While looking for new ways to improve sustainability we must approach it as a question that does not belong to only one discipline. It is fortunate that we witness a growing recognition of essential value of interinstitutional collaborations (CES, 2019).

Here we present the possible effects we could introduce if interinstitutional collaborations become interdisciplinary too.

1. 21st century skills acquisition - if scientific higher education institutions collaborate with cultural public institutions our students would get a rare opportunity to learn not only their core disciplines, but also creativity, communication, critical thinking, and collaboration, i.e. 21st century skills (Kivunja, 2015), through 5Es from real-life: experience, engagement, exploration, evaluation, and elaboration (Figure 4.).
2. Social capital acquisition - through such collaborations they would gain new contacts outside of their circle of friends and gain cultural competence which is quite important 21st century skill too (Figure 4 and 5).
3. Toward more sustainable society - Interinstitutional interdisciplinary collaborations might be the highways toward more sustainable society. Although we witness considerable focus on sustainability in science and politics, our society is continuously developing unsustainable paths. We agree with Abson and colleagues (2017) that one of the cornerstones for sustainable interventions is reconstruction of institutions, since they guide and restrict the actions.

Higher education institutions are traditional actors of change and innovation in society (Huge et al., 2016). Therefore we call for more bravery and investments in research in the area of interinstitutional interdisciplinary collaboration arguing that such collaborations might be powerful mechanisms for new teaching and learning, and new avenues toward more sustainable society.

## 5. CONCLUSION

We live in a world where our leading institutions claim that many of the complex problems society is currently facing demand innovative solutions that combine knowledge from different scientific disciplines (Van Rijnsoever and Hessels, 2011). However, we agree that interdisciplinary collaborations are extremely risky by being unpredictable in their outcome and the process (Kanakia, 2007). As Briazu argues (2017) even though the literature offers advice on principles for good interdisciplinary work (Nancarrow et al., 2013) there are still no guarantees that the risk and pitfalls can be fully avoided. One can only be brave and work hard hoping that benefits will outnumber the challenges.

Bearing in mind that interdisciplinary research has the potential to deepen knowledge in one's own discipline and to provide new insights and inspiration from other disciplines, we should continue developing interdisciplinary interinstitutional projects and learn from both the results and the process of creation. Most importantly, it seems that our youngest are interested in partnering up with us in exploring communication and collaboration in multidisciplinary interinstitutional settings. We should do nothing less than help them to open as many doors as we can.

To conclude, we must say that there is a lot more to be done, be experienced and learn from, especially in the realm of digital storytelling as a tool for learning and bridging social capital acquisition. Therefore, this paper should be taken as a tool that will help the preparation and analysis of such complex and rich collaborations.

## REFERENCES


Abson, D. J., Fischer, J., Leventon, J., Newig, J., Schomerus, T., Vilsmaier, U., ... and Lang, D. J. (2017). Leverage points for sustainability transformation. *Ambio*, *46*(1), 30-39.

Alexander, J. C. (2014). Morality as a cultural system: On solidarity civil and uncivil. In *The Palgrave Handbook of Altruism, Morality, and Social Solidarity* (pp. 303-310). Palgrave Macmillan, New York.Baym, N. K. (2015). *Personal connections in the digital age*. John Wiley & Sons.

Borgdorff, H. (2011). *The production of knowledge in artistic research*. na.

Briazu, R. A. (2017). The challenges and joys of interdisciplinary research: Insights from a psy-art collaboration. *Developmental Psychology Section*, 37.

Brown, R. R., Deletic, A., and Wong, T. H. (2015). Interdisciplinarity: How to catalyse collaboration. Nature News, 525(7569), 315.

Dreaon, O., Kerper, R. M. and Landis, J. (2011). Digital storytelling: A tool for teaching and learning in the YouTube generation. Middle School Journal, 42(5), pp. 4-10.

Downing, D. A., Covington, M. A., & Covington, M. M. (2000). *Dictionary of computer and Internet terms*. Barron's Educational Series Inc.

Flora, C. (2018). Are Smartphones Really Destroying the Adolescent Brain?. Scientific American, 318(2), 30-37.

Frankel, L., & Racine, M. (2010). The complex field of research: For design, through design, and about design. In Proceedings of the *Design Research Society* (DRS) International Conference (No. 043).

Foucault, M. (1977). *Discipline and punish* (A. Sheridan, trans.). New York: Pantheon.

Ito, M., Baumer, S., Bittanti, M., and Cody, R. (2019). *Hanging out, messing around, and geeking out: Kids living and learning with new media*. MIT press.

Hugé, J., Block, T., Waas, T., Wright, T., and Dahdouh-Guebas, F. (2016). How to walk the talk? Developing actions for sustainability in academic research. *Journal of Cleaner Production*, *137*, 83-92.

Kale, A. (2017). The Art of Social Connection: Exploring Former Refugee and Host Society Integration via a Collaborative, Participatory Painting Project in Wellington City.

Kanakia, R. (2007). Talk touts benefits of interdisciplinary approach, as well as some of its pitfalls. *Stanford News*. Retrieved 4 July 2019 from https://news.stanford.edu/news/2007/february7/barr-020707.html

Karakas, F., Manisaligil, A., & Sarigollu, E. (2015). Management learning at the speed of life: Designing reflective, creative, and collaborative spaces for millenials. *The International Journal of Management Education*, 13(3), 237-248.

Kick, A. L.; Contacos-Sawyer, J.and Thomas, B. (2015). How Generation Z's reliance on digital communication can affect future workplace relationships. Competition Forum, 13(2), p. 214-222.

Kivunja, C. (2015). Exploring the Pedagogical Meaning and Implications of the 4Cs "Super Skills" for the 21st Century through Bruner's 5E Lenses of Knowledge Construction to Improve Pedagogies of the New Learning Paradigm. Creative Education, 6(02), 224.

Kuleva, M. (2018). Cultural administrators as creative workers: the case of public and non-governmental cultural institutions in St. Petersburg. *Cultural Studies*, *32*(5), 727-746.

Kymlicka, 2015 Solidarity in diverse societies: beyond neoliberal multiculturalism and welfare chauvinism, Comparative Migration Studies2015**3**:17

Nancarrow, S.A., Booth, A., Ariss, S. et al. (2013). Ten principles of good interdisciplinary team work. *Human Resources for Health*, 11(1), 19.

Ng A.W. (2019) Sustainability and Education Policy. In: Leal Filho W. (eds) Encyclopedia of Sustainability in Higher Education. Springer, Cham

Prensky, M. (2001). Digital natives, digital immigrants part 1. *On the horizon*, 9(5), 1-6.

Sanders, L. (2008). An Evolving Map of Design Practice and Design Research. Interactions, 15(6), 13- 17.

Simonsen, J., and Robertson, T. (Eds.). (2012). *Routledge international handbook of participatory design*. Routledge.

Turner, A. (2015). Generation Z: Technology and social interest. *The Journal of Individual Psychology*, *71*(2), 103-113.

CES, 2019, Council for European Studies, retrieved September 23rd https://www.europenowjournal.org/2017/06/05/from-interinstitutional-competition-to-interinstitutional-collaboration/

Turkle, S. (2017). *Alone together: Why we expect more from technology and less from each other*. Hachette UK.

Turkle, S. (2015). Reclai*ming conversation: The power of talk in a digital age*. Penguin

Van Rijnsoever, F. J., & Hessels, L. K. (2011). Factors associated with disciplinary and interdisciplinary research collaboration. *Research policy*, 40(3), 463-472.

Williams, D. (2006). On and off the 'net: Scales for social capital in an online era. *Journal of Computer-Mediated Communication,* 11(2), article 11. Retrieved October 23, 2018 from http://jcmc.indiana.edu/vol11/issue2/williams.html