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Journal of the European Honors Council, Volume 1, No. 2
Special Issue: Honors Communities

Contents

The Journal of the European Honors Council is first published online and uses article numbers instead of unique page ranges

Instructions for authors

We invite you to submit research papers, as well as notes on good practices or preliminary research results to the Journal of the European Honors Council. Contributions can be sent to the Editorial Board through e-mail: journal@honorscouncil.eu
There are two options for contributors: peer-reviewed papers or edited notes.

1. Peer-reviewed paper

This is a contribution of between 1,500 and 5,000 words (approximately). After receiving your paper, the editorial board will send it to two reviewers who remain anonymous to the authors. The reviewers can indicate if they accept the paper (with minor changes), ask you to submit a new version with major changes, or reject the paper. Major considerations are:

- The paper is written in English, in a clear and concise language that will help editors and reviewers concentrate on the scientific content of your paper.
- The paper is relevant in the context of the EHC goals (see below).
- The paper is not published elsewhere or submitted to a journal or book.

2. Edited note

This is a contribution of between 500 and 1,500 words (approximately), briefly summarizing (preliminary) findings or good practices. Notes are edited by the editorial board. They need to be written in English, in a clear and concise language that will help readers to concentrate on the content, which should be relevant in the context of the EHC goals (see below).

In all cases, authors should send in their manuscripts following the template which can be found through www.jehc.eu. Contributions are considered in the order they are received. Once accepted, we aim to publish as quickly as possible. Online publishing is in pdf-files.
In case of questions, the Editorial Board of the Journal of the European Honors Council can be contacted by e-mail: journal@honorscouncil.eu.

The European Honors Council pursues the following goals:

1. Supporting and stimulating development of honors education and its structural embeddedness in the education system
2. Creating a common language
3. Supporting teacher professionalization (within honors)
4. Creation and exchange of knowledge about honors programs
5. Stimulating and facilitating research about honors
6. Enabling networking for people involved in honors
7. Stimulating spin-off of successful honors practices to regular education
8. Promoting an easier flow of talented students from secondary to higher education
9. Stimulating professional development of honors students and connection to working life / research career
10. Stimulating collaboration and inspiring student exchange at honors level

Note

Introduction to the special issue: Honors Communities

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On behalf of the Editorial Board we are honored to present you the second issue of of the Journal of the European Honors Council (JEHC). With the JEHC, we aim to share knowledge and good practices regarding honors programs and talent development programs in higher education. This second issue is a special issue, dedicated to contributions related to the International Honors Conference that was held at Windesheim University of Applied Sciences in Zwolle (the Netherlands) in June 2017.

1. Honors communities

Creating community was the central theme of the 2017 International Honors Conference, hosted by Windesheim University of Applied Sciences. The goals of the conference were to strengthen honors communities on a local, regional, national and international level; to deepen and broaden the community experiences of students, lecturers, researchers and the work field; and to give students a podium to present their research and innovative projects in collaboration with Glocality (Open Access Undergraduate Academic Journal - https://www.glocality.eu).

The conference tracks were:
1. Creating Community
2. The honors learning experience
3. The honors lecturer
4. Honors' impact
5. International collaboration and/in honors
6. Students' poster sessions for (under)graduate research and innovative projects (in collaboration with Glocality)

Community is one of the cores of honors education; faculty, students and practitioners form a learning community in which close contact, learning-by-doing and co-creation are key. More recently, community has been embraced by regular degree programs, which illustrates the pioneering and innovative role of honors education. The conference hosted the first three contributions on the transfer from honors to regular education.

2. Conference highlights

The conference welcomed around 350 visitors from eight different countries and hosted more than 50 workshops and presentations. The opening keynote was delivered by Etienne and Beverly Wenger-Trayner, who are well known for their work on communities of practice and social learning theory. In the closing keynote, Margriet Sitskoorn, professor of neuroscience at Tilburg University in the Netherlands, explained how the development of the prefrontal cerebral cortex is important for the success rate of all students. Sitskoorn showed how to develop talents and accomplish goals. She explained why social skills are so important and how students can learn from working in learning communities, to help them escape their stimulus response.

The students' poster sessions were a great success. In total 26 students and student teams participated in two categories: (under)graduate research and innovative projects. Students had to pitch their project and interact with several judges. For the first time the International Honors Conference awarded the best poster presentations in each category. There were two winners in the category (under)graduate research: Khadija Moses (Loyola University, New Orleans, USA) with 'Synthesis and Characterization of New Charge Transfer Complexes as Potential Superconductors' and Frederique Stapke (Windesheim Honours College, Zwolle, the Netherlands) with 'One person's trash is another person's treasure - Promoting pro-environmental behaviors on the household level in Balinese communities'. There was one award winner in the category innovative projects with the title 'Vegetables, Cows and Art' by Anna Kotcharayan, Daniëlle Bakker, Oafa Boukhri, Stef Windt and Tom Kooiman, from the Honors Programme New Towns (Windesheim Flevoland, Almere, the Netherlands).
For an impression of the conference, see https://www.youtube.com/watch?v=uu-ex7ZJoOQ.

3. Contributions to this issue

In this issue, authors present you their notes and papers which are related to the presentations they held in Zwolle.

The first contribution 'Interdisciplinary Learning: A Strategy of Chinese Honors Education For providing the depth and scale of learning' is from China. Qiu Li-min, Ye Jing-jia and Tang Xiao-wu present the Chu Kochen Honors College, which offers a series of honors programs for talented and motivated students from all academic disciplines of Zhejiang University in China. The honors programs offer both general education and interdisciplinary learning. Through the customized curriculum and interdisciplinary training, honors students are required to push themselves academically and strive for excellence. Students enrolled in honors programs are encouraged to become independent thinkers and creative problem solvers.

The contribution of Amber Z. Smith (Virginia Tech Honors College, USA), 'Supporting Honors Students Through a Peer Advising Center', addresses the needs of honors students. Honors programs exist to address the unique educational needs of honors students, but as our services grow in scope and complexity, there is a risk of losing sight of some of those needs. The article discusses Virginia Tech's latest peer programming initiative, an Honors Peer Advising Center; and the pedagogy behind this approach.

The contribution of María Garcia Alvarez and Liesbeth Rijsdijk develops around the new educational concept The Value Creators of the BBA programme in Global Project and Change Management offered by Windesheim Honours College (WHC) in the Netherlands. It presents the 4E model as a tool to enable students to navigate in a time restricted series of brainstorms through the steps of exploration, engagement, elaboration and evaluation in order to comprehend a global challenge (or a Sustainable Development Goal) like "No Poverty" or "Affordable and Clean Energy" and come to concrete ideas or solution perspectives and create value.

The paper by Tineke Kingma, Karien Dommerholt and Liesbeth Rijsdijk presents the application of theories and experiences in the day-to-day environment of honors education: 'the honours learning environment'. It presents a framework of eight characteristics which are the input for the content and design of honors programs at Windesheim University of Applied Sciences (the Netherlands). The model is designed for teachers to think critically about their behaviours and attitudes in order to challenge intrinsically motivated and gifted students. The eight characteristics are illustrated by animations.

The contribution 'Which factors play a role in the development of students to become professional leaders?' by Arie Kool from Hanze University of Applied Sciences in the Netherlands poses the question how an honors coach could support the personal development of students to become future leaders in their work field. It is still fairly unknown what focus coaching should take, when it comes to the development of professional leadership qualities. The personal stories of the respondents show that positive development was speeded up when students became aware of their personal motivators and could connect to them.

'Designing clinical reasoning simulation software through interdisciplinary collaboration of honours students from veterinary and computing sciences' is written by Andrea A. G. Laumen, Milou van Velzen, Ivan Veul, Ineke Lam, Wolfgang O. Hürst and Yvonne R. A. van Zeeland from Utrecht University (the Netherlands). Clinical reasoning is an essential skill to master in professional veterinary and medical health sciences, yet teaching and learning this skill can be challenging for both teacher and student. The article presents an interdisciplinary project with veterinary and computing science honors students to develop a first prototype for veterinary sciences.

Finally, the paper 'Honors programs as forerunner for 21st century skills?' is an international collaboration between authors from the Netherlands and Belgium. Pierre van Eijl, Ton Peeters and Albert Pilot (Utrecht University, The Netherlands), Henmar Moesker (Hanze University of Applied Sciences, The Netherlands), Annemie Dillen (KU Leuven, Belgium) and Stan van Ginkel (Utrecht University of Applied Sciences, The Netherlands) present an explorative study, focusing on students' perceptions regarding their learning gains related to the application of 21st century skills in honors programs. Aiming to explore the opportunities for incorporating 21st century skills in higher education curricula, the authors found that students perceived these skills as being highly promoted in their honors program, in comparison with their regular program. They conclude that honors programs can indeed be a forerunner for 21st century skills, but that this requires a method to adjust and incorporate it into regular programs.

4. Final remarks

The wide range of issues and perspectives covered in the contributions to this issue shows a great determination by all involved to spread talent development programs in higher education and to critically reflect on the best ways to offer challenges to students willing and able to do more than the regular program offers. Aiming to offer an easily accessible platform for exchange of research insights and good practices, the Journal of the European Honors Council will continue to publish contributions in full open access in 2018. The Editorial Board of the JEHC invites you to contribute to the next issue(s) of the Journal by sending in your papers and notes. Our call for contributions can be found on the website www.jehc.eu.

Note

Interdisciplinary Learning: A Strategy of Chinese Honors Education for providing depth and scale of learning

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Abstract

Chu Kochen Honors College (CKC) offers a series of honors programs for talented and motivated students from all academic disciplines of Zhejiang University (ZJU). The Honors Programs offer both general education and interdisciplinary learning. Through the customized curriculum and interdisciplinary training, honors students will be required to push themselves academically and strive for excellence. Students enrolled in honors programs are encouraged to become independent thinkers and creative problem solvers.

1. Introduction

Chu Kochen Honors College (CKC) was established in 1984, named after the great scientist professor Chu Kochen (1890-1974). Chu Kochen Honors College (CKC) is one of the oldest Honors Colleges and also the most comprehensive honors college in China and a member of the C9 group. C9 is the group of 9 top universities listed into China's 985 project for nurturing first-class universities, including Peking University, Tsinghua University, Fudan University, Shanghai Jiao Tong University, Nanjing University, Zhejiang University, University Of Science And Technology Of China, Harbin Institute Of Technology and Xi'an Jiaotong University (see table 1). Professor Chu Kochen was not only a world famous expert on meteorology and geography but also a great educationist. He stressed that the purpose of a university is to bring up students 'who are fair, faithful and firm, who can take the leadership and steer a nation' when he acted as the president of Zhejiang University.

In 2005, professor Hsue-shen Tsien, known as 'The Father of Chinese missile', raised a question to the higher education in China: 'After so many years, no achievements of any of our students are comparable to that of the academic masters of Republic of China period (1912-1949). Why do we always fail in cultivating outstanding talents?'

Table 1. Chinese C9 Collegiate Honors Colleges and Programs

University Name	Program Name	Established Time	Number of Honors Students	Number of Students at University	Proportion
University of Science and Technology of China	School of the Gifted Young	1978	520	7400	7.02%
Zhejiang University	Chu Kochen Honors College	1984	1760	22929	7.68%
Xi'an Jiaotong University	Class for Gifted young people / Qian Xuesen Experimental Class/	1985/ 2007	920	16126	5.71%
Harbin Institute of Technology	Honors School of HIT	1993	480	16280	2.95%
Nanjing University	Kuang Yaming Honors School	1998	400	12800	3.13%
Peking University	Yuanpei College	2001	480	11368	4.22%
Fudan University	Wangdao Program	2010	680	14100	4.82%
Shanghai Jiao Tong University	Zhiyuan College	2010	560	16116	3.47%
Tsinghua University	Tsinghua Xuetang Personnel Cultivating Plan	2011	560	15184	3.69%
Total			6360	132303	4.81%

Source: Ye, Qiu & Xing, 2017

2. Focus of the College

As a response to the 'question of Tsien', Chu Kochen Honors College improves the honors programs to help students to develop their innovative ability and build up a solid academic background, by emphasizing on interdisciplinary study and encouraging innovation. A series of honors courses and seminar courses are offered to honors students, and multidisciplinary scholars from across the university are invited to be mentors of honors students.

The current programs of CKC include Honors Program of Science & Engineering (mixed class), Honors Program of Liberal Arts & Social Science, Pursuit Science Class, Badenian Class program for medicine, Composite Training Programs and so on.

3. Programs

For example, the Honors Program of Science & Engineering (mixed class) was started from 1984, aiming to enhance the science foundation of engineering students and to improve the ability of science students to innovatively use practical knowledge and solve real problems. A special curriculum is designed to help students build up a solid academic background in Science, including a diverse array of honors-level core courses, departmental honors courses, interdisciplinary honors courses and leadership development. During the first two academic years, the curriculum aim is capacity training. Honors courses provide depth and breadth of study. Honors students also benefit from the customized curriculum which

includes interdisciplinary seminars and sequenced courses on research methods and a series of interdisciplinary seminars on topics not typically offered by other departments (e.g. in CKC, every year experts are invited to interpret for honors students the research work which won the Nobel Prize). For the following two years, all students are to select their majors in any field offered at ZJU and they need to complete a research project and a thesis under the advisement of a faculty mentor. Honors students are encouraged to engage in more interdisciplinary studies. And the students can also earn honors credit by overseas study and internship experiences. Students of CKC pursue majors in all undergraduate divisions, and they are encouraged to develop the ability to understand the content, merit, and limitations of different issues in science.

A vibrant community is created among students and teachers through the social and cultural activities orchestrated by the program. To enrich college lives, CKC organizes a series of campus cultural activities. As a symbol of the special cultivating style in CKC, MIX Day is celebrated every autumn. It includes a series of exciting activities to show the students' creativity, dreams and abilities.

Since 2015, three interdisciplinary learning programs have been carried out in CKC, including Finance + Mathematics, Computer Science + Statistics, Automation + Computer Science. These programs are supported by the School of Economics, School of Mathematical Sciences, College of Computer Science and Technology, and College of Control Science and Engineering, under the coordination of the CKC. The interdisciplinary programs offer double degree / double professional training in four years for selected students and are expected to bring advantages not only to students but also mentors and the university. However, to improve the model of interdisciplinary education there are still some issues which need exploration and perfection:

1. How to recognize the students with high potential and open-minded.
2. How to provide an effective platform for communication between teachers and students involved in the interdisciplinary programs.

Each year, about 500 new students are selected for CKC. Only the top ten percent incoming freshmen and current full-time ZJU students with a minimum GPA of 4.0 may apply to join the CKC. The honors students are selected based on their high school GPA, performance in screening tests and interviews which focus on their ambition, potential traits, stress coping skills, leadership, responsiveness, independent spirit and initiative. They must maintain at least a 3.0 cumulative GPA and complete 22 credits per semester in the first two years to keep in good standing with the Honors College.

These honors students are instructed by a group of the best scholars who are full of enthusiasm for the honors programs on campus. To teach in honors or guide honors students, faculty must be distinguished in their research field and with rich teaching experiences. To emphasize interdisciplinary learning, students are encouraged to form interdisciplinary teams to tackle projects of their interests under the guidance of an interdisciplinary team of mentors.

Up to date, there are about eight thousand honors alumni of CKC worldwide. Some of them have already made remarkable contributions in their own fields. One of the honors alumni, Professor Wu Zhaohui, is now the president of Zhejiang University and the dean of CKC. Facing the complicated and rapidly changing environments in higher education, some research projects of higher education are also carried out in CKC to provide clues of what will

be the best for the development of honors students. CKC is also looking forward to have more inspiration to improve the quality of education through learning from experience of honors education in the United States (Jones, 2016; Kampf, Chasek & Falconer, 2016) and Europe (Wolfensberger, 2015; Van Eijl, Moesker & Eyckmans, 2017).

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Note

Designing an Honors Peer Advising Center

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1. The Need

The 1,500 students in the Virginia Tech Honors College are asked to be highly independent: within a set of parameters, they design their own honors education by selecting the opportunities that will best enrich their individual course of study. Students benefit from personal guidance during this complex planning process. Historically, our honors directors offered limited honors advising as needed. However, as we transition from honors program to college, our services are growing in scope and complexity, as are our responsibilities. We need a new way to provide reliable, personalized honors student support.

2. Our Solution

Learning centers have been shown to increase student retention, satisfaction, academic achievement, and self-reliance (Cuseo, 2003; Pascarella & Terenzini, 1991; Smith, Walter, & Hoey, 1992), all outcomes that we hope to foster as we grow. And while community connection and campus involvement are instrumental in helping all students thrive, it has shown to be particularly essential for honors students, who need a community of academic peers (Cuevas, 2015).

Fortunately, Honors at Virginia Tech already has a thriving culture of peer education: our peer educators are the primary instructors of our first-year seminars and reading seminars, classes that are taken by hundreds of students every semester and that consistently receive outstanding course evaluations.

Therefore, to increase student support in the context of our intellectual community, we decided to create a learning center grounded in our strength: an Honors Peer Advising Center.

3. The Writing Center Model

To structure this new initiative, we turned to the writing center model because of how well its goals complement our own. Writing centers are designed to engage students as active

participants in their own problem-solving, leaving them better equipped with the skills and confidence to approach writing problems more effectively. According to Muriel Harris (1988) in "The Concept of a Writing Center," writing centers share the following characteristics:

1. One-on-one tutorials are the primary service.
2. Tutors are coaches and collaborators, not judges or evaluators.
3. Each student's individual needs are the focus of the tutorial.
4. Hands-on experimentation and practice are encouraged.
5. Centers are inclusive of students from any background, discipline, or level in school.

These approaches align nicely with the needs of an honors peer advising center:

1. Since honors students already seek out faculty and mentor interactions, they would likely value the focused attention of knowledgeable peer advisors.
2. Peer education already inherently involves collaboration, facilitation, and helping—not judging.
3. Individualized support is a logical and effective way to address questions or issues that arise from individualized honors education.
4. Honors students might be more willing to practice or test unfamiliar ideas around a peer.
5. A generalized, non-disciplinary structure is essential for an honors college with first-through fifth-year students from all of the disciplinary colleges.

4. The Honors Peer Advising Center

This fall, we are opening the Honors Peer Advising Center (HPAC), in which trained honors peer advisors teach honors students the strategies and resources to solve honors-related problems. The Center's primary service will be one-on-one sessions, either 30 or 60 minutes each, that closely mirror the writing center philosophy. Any honors student can make up to 15 appointments each semester. We also plan to offer occasional small-group workshops on topics of common interest to honors students. These workshops will begin with a presentation and then let attendees work on their own related projects with the help and supervision of the peer advisors.

5. Honors Peer Advising Needs

To anticipate our students' peer advising needs, we asked our current and recent peer educators what kinds of honors-related questions their students asked. They responded that the most common questions related to:

1. Honors credit and diplomas
2. Role of honors staff members
3. Balancing honors and major requirements

The first and third categories align with what we expected: students have the challenging task of telling *us* how they will balance Honors with their other commitments, which requires high fluency in our academic policies. We anticipate that much of the peer advisors' work will involve helping students translate policies and opportunities into students' individual contexts. The second area of confusion surprised us since we have descriptive working titles: e.g., Director of Honors Admissions or Director of Major Scholarships. Nevertheless, this issue underscores the usefulness of a one-stop shop like the HPAC—

students do not have to determine the best audience for their question before going in to ask it.

6. The Honors Peer Advisors
For the 2017–2018 academic year, we selected seven peer advisors. These students applied for the opportunity and were selected based on their desire and ability to help their peers, and their experience in areas such as mentoring, teaching, Honors, and Virginia Tech resources. The peer advisors will take a two-credit Honors Peer Advising Practicum each semester while they serve. Since we cannot pay them, this course enables us to offer academic and honors credit for the experience while also training, supervising, and teaching relevant educational techniques in the context of their day-to-day work. The course will involve reflection, role playing, skill observations, and semester projects to improve the HPAC in ways identified by the peer advisors.

7. Anticipated Use
Beginning in the fourth week of the semester, the peer advisors will each offer five hours of peer advising every week, or up to 70 half-hour appointments overall. While we cannot know for sure how many students will sign up, we are requiring over 200 incoming students to get their proposed honors plan of study approved through the HPAC. This requirement alone will generate one or more appointments per student, and we expect that others will seek voluntary assistance, as well.

8. Looking Ahead
Perhaps the most challenging part of this endeavor is acknowledging that we cannot know how to run the Honors Peer Advising Center until we are running it—and probably well after. We can use an established structure and prepare to answer previously asked questions, but this is ultimately still a new resource that will take time to refine and integrate into our College culture. The practicum should help by providing an opportunity for us to regularly discuss issues and our responses, but I expect our flexibility to be tested. We will probably struggle to obtain resources until we can demonstrate a need for them and prove our value.

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Note

Value Creators: an innovative learning environment to shape the future together and find glocal *soul*utions to the challenges ahead

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1. Introduction

The world is becoming more complex and educational institutions need to adjust to the demands of this new phase of our network society. In this age of globalization, rapid and disruptive changes and technological developments, society and organisations are increasingly confronted with developments and challenges which are more and more "wicked" in nature. Global warming, different human rights issues, the world economic crisis, an increasing gap between rich and poor, food security and depletion of resources to name a few. These challenges are difficult, if not impossible, to solve, and for each solution, due to interdependencies, other questions and challenges arise (Rijsdijk & de Bot, 2017).

These wicked challenges require other ways of thinking and addressing compared to challenges which can be defined in terms of cause and effect (linear) and for which there are definite solutions available. To prepare students for their future role as project and change managers addressing wicked challenges, Windesheim Honours College (WHC) in the Netherlands, developed an innovative educational concept which is called The Value Creators. WHC offers an honours bachelor programme (BBA) in Global Project and Change Management. The programme is English-taught and selects international students based on motivation, above-average ability and social involvement. In the Value Creators semester, third and fourth year students work on a wicked challenge. During this semester, students develop essential 21st century skills like social responsibility, collaboration and leadership, creativity and innovation, critical thinking and problem solving in four areas: Civil Society, Global Health, Social Entrepreneurship and Urban Dynamics. We developed our own methodology for value creation: The E-model. It is based on Design thinking, connectivism (Siemens, 2005) and Theory U (Scharmer & Kaufer, 2013). It describes four essential phases

to lead interdisciplinary teams through value creation when dealing with wicked challenges and complexity.

The Value Creators programme offers students and other stakeholders an environment to shape the future together and address wicked challenges from a local and global perspective.

2. Methods

In close consultation with our students and professional networks, we have been able to create a solid educational concept based in connectivism theory (Siemens, 2005), Theory U (Scharmer & Senge, 2009), Five Minds for the Future (Gardner, 2008) and communities of practice (Wenger, 1998). We wanted to create an environment which facilitates the transition from knowledge as a goal to knowledge as a tool. Bounded freedom is a fundamental part of the DNA of the Windesheim Honours College. In the Value Creators programme we have extended bounded freedom by taking away the class schedules and operating with education on demand. Through different workshops which we provide and which students can create on demand, they build up their own toolbox to operate outside, discovering and engaging with professional networks. We offer four fields of expertise to experience Value Creators: Social Entrepreneurship, Civil Society, Global Health and Urban Dynamics. We have chosen those topics in alignment with EU agendas as well as local and regional agendas. We invite our students to explore the knowledge related to those topics which are embedded in different networks outside the campus. For that, we also share space with policy makers, entrepreneurs and other organizations in a collaborative working hub (called Brainz) in the city of Zwolle. The Value Creators journey departs from a complex question. Students can team up with other fellow students from different disciplines. Together they start identifying networks which can play an important role in activating change and creating value.

In order to help students navigate through the process of addressing complex issues, we developed the E-Model. Inspired by traditional forms of design thinking and incorporating elements of different theories mentioned before, this model is a simple method to help students and other stakeholders to focus, to identify the most important stakeholders and ingredients to take action and create societal change and value. The E-model consists of four steps:

- Step 1. **Explore:** We invite students (and other users of the model) to explore the wicked challenge they are addressing. Exploring the context, possible causes and possible solutions helps gain expertise in the topic. This is the time for brainstorming and shaping good questions and discussing together the Big Dream.
- Step 2. **Engage:** It is time to map the networks and identify stakeholders who can be key players in solving the complexity that is being addressed. Who are they and why are they relevant in this process? Are they part of the problem or of the solution? What is their specific role or power in moving things forward?
- Step 3. **Elaborate:** It is time to shape the ideas and be more specific on the role of each network and stakeholder in addressing the wicked challenge and defining the activities that each stakeholder should undertake. It is about going from Dream to Action.

- Step 4. **Evaluate:** This is the final phase of the model. The participants define which value will be created for whom and how it will be evaluated.

To make the Value Creators journey as valuable as possible for our students, we introduced a self-assessment practice. Students are in control of 25% of their grade. In order to do this, we plan three individual meetings with them. In the first meeting, we invite them to reflect using the framework of the 5 Minds for the Future (Gardner, 2008). Based on this reflection, they have to create their own learning objectives linked to the 5 Minds Model and our own Value Creators' learning objectives. Then they need to think about two goals they want to achieve during their Value Creators journey at personal, professional and community level. In the second meeting we discuss issues they are experiencing, extra tools they may need to achieve their goals, etcetera. In the last meeting, students need to assess their own learning journey and present the evidence to sustain the grade they are claiming in front of a professional jury, consisting of lecturers, professors and work field representatives.

3. Results

Our Value Creators programme was piloted in 2016-2017 with great expectations from students and lectures. During the whole year, we have worked closely together with our students exchanging information on how to improve the concept. Students experienced the Value Creators as one of the most insightful learning moments of their whole life as students. This of course makes us feel very proud. However, we cannot ignore the fact that extreme bounded freedom has been difficult for some students who feel more comfortable inside structures that facilitate their time management. It is important that students get proper training in previous years on how to take ownership of their own learning journey. We have developed four high quality SPOOCs (Small Private Owned Online Courses) to contribute to the discipline mind of students and allowing them to speak the language of other professionals in the field of expertise they have chosen. Next to the mandatory workshops, we mainly focus on training them in complexity, networks and how to self-assess themselves. We also allow a 4 EC free choice, which can consist of following a MOOC of their interest or attending conferences and seminars. Providing some structure does help to lead the students through this quite open and organic process of the Value Creators semester.

The Value Creators have been a learning process for lecturers as well. They need to take a step back from their role as lecturers and need to become coaches who guide the learning process and reflection of the students. The next step for our concept is to develop an online learning community which allows us to take the collaboration process of creating value and learning into a virtual setting with no time or space constrains. This will facilitate the process of connecting to international networks. It is also our aim to extend the concept to other universities. This way, we could have cells of Value Creators operating in different countries and working on complex issues from different disciplines and perspectives. We invite other educational institutions to contact us to join the exciting journey of creating societal value together.

4. Discussion

New concepts of education are necessary in order to address the demands from the work field regarding young professionals who are focused on quality and value. However, they do require commitment and investment of time and money from the educational institutions in

order to develop effective methods. One size does not fit all. This also applies for innovative concepts. In the case of the Value Creators, the concept matches the progression of bounded freedom, experiential learning and self-reflection embedded in previous years of our curriculum. It is therefore a building block, also preparing them for their final bachelor year.

5. Conclusions

Value Creators have contributed to expand bounded freedom in an already flexible curriculum focused on addressing the individuality of each student, and particularly addressing complexity and networks. It is an organic concept, meaning we expect it to grow and develop depending on the students, networks and topics that we will be working on within the Value Creators setting every year. It is a concept that not only allows those dynamics but aims to create environments that are not static. This may take an extra effort when the limits are not clearly drawn, but we do not have a recipe for value, just the framework to facilitate creating it and eventually, make it happen.

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Paper

The honours learning environment of Windesheim University of Applied Sciences

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Abstract
This paper presents the application of theories and experiences in the day-to-day environment of honours education in a so-called honours learning environment. In 2009, Windesheim University of Applied Sciences (UAS) started with honours education. An important question from the start was: what characterizes the honours learning environment? Based on experience, knowledge exchange and input from theory, the honours learning environment was developed, which is the fundament of honours and talent development at Windesheim UAS. The eight characteristics are illustrated by animations and explanations based on scientific studies.

Keywords: honours learning environment, higher education, honours pedagogy, honours programmes, co-creation

1. Introduction
Honours education at Windesheim University of Applied Sciences is specially designed education for ambitious, motivated students who want to do more than the regular programme offers (Wolfensberger, 2015). These programmes aim at providing high-achieving and motivated students enriched learning experiences (Byrne, 1998), focused on broadening and creating new knowledge with special attention for more generic competences (Allen et al., 2015). They meet the needs of talented students to experiment and go beyond the beaten tracks (Wolfensberger, Pilot, & Van Eijl, 2012) and offer possibilities to students to distinguish themselves (Allen et al., 2015). Talents from our point of view are strengths which make individuals stand out, compared to others. The Gallup's research (Rath, 2007) has shown that a strengths-based approach improves the confidence,

direction, hope, and kindness towards others and individuals are six times more likely to be engaged in their job. A strengths-based approach leads to stronger teams. In honours education, teachers, motivated and gifted students and professionals work together. They all play an important role in this cooperation. Windesheim has made a choice to not name every target group separately but instead to describe the environment in which these actors work together: the Windesheim honours learning environment. Based on almost ten years of development of an honours learning environment and implementation of honours education at Windesheim, we developed a framework of an honours learning environment. This framework includes results from studies (Janssen, 2017; Renzulli, 2005; Scager, Akkerman, Pilot, & Wubbels, 2013; Simons, 1999; Sternberg, 2003), from experiences and from learning theories such as positive psychology (Seligman, Ernst, Gillham, Reivich, & Linkins, 2009), Appreciate Inquiry (Cooperrider, Whitney, & Stavros, 2008), differentiation in pedagogy (Janssen, 2017; Kok, 2003), experiential learning (Kolb & Kolb, 2005), self-determination theory (Ryan & Deci, 2017) and honours pedagogy (Scager, Akkerman, Pilot, & Wubbels, 2014; Wolfensberger, 2012). Apart from this framework, we made use of already formulated characteristics of honours students; what makes a student "honours"?

2. Characteristics of honours students
Honours students do not form a homogeneous group, but different studies (Achterberg, 2005; Kazemier, Offringa, Eggens, & Wolfensberger, 2014; Kingma, Kamans, Heijne-Penninga, & Wolfensberger, 2016; Wolfensberger & Offringa, 2012) show the following characteristics as being often present in honours students:
  • They are eager, wanting to investigate and experience things and they want to experiment
  • They are intrinsically motivated, ambitious and score high on autonomy
  • They appreciate the freedom to work on their development
  • More often than average they participate in volunteer work or activities outside of their studies because they find them fun or meaningful
  • They generally have a broad interest and are strongly service-oriented
  • Honours students are generally enthusiastic, result-oriented and self-directing, but can at the same time also be shy, anxious or risk-averse
  • Honours students can be impatient when it comes to bureaucracy
  • They are mostly open to new experiences and are conscientious.

Honours students value the following points in honours programmes, in order of importance (Van Eijl, Pilot, & Wolfensberger, 2010):
  • Student-teacher interaction
  • Community formation
  • Practice-orientedness and authenticity
  • Room for initiative
  • Small scale of the organization
  • Mutual choice for participation
  • An interest in other areas than their study programme
  • Quality of the teacher as a condition.

Motivated students have a strong need for a teacher who supports them in their need for autonomy (Núñez, Fernández, León, & Grijalvo, 2014). In order to be able to make honours

programmes successful for students, it is important to keep feeding their intrinsic motivation. Research done by Wolfensberger (2012) shows three pillars of honours pedagogy that are characteristic for teaching in honours programmes. These pillars are: creating community, stimulating academic competencies and offering freedom. They show a strong resemblance to the self-determination theory. The self-determination theory (Ryan & Deci, 2000; 2017) tells us that intrinsic motivation of students in general is fed when three psychological basic needs are met, which are autonomy, competence (mastery) and connectedness. This asks for an autonomy-supportive learning environment in which a teacher, apart from connectedness, can also offer a good balance between autonomy and structure (Pintrich & De Groot, 1990; Reeve, 2009; Sierens, Vansteenkiste, Goossens, Soenens, & Dochy, 2009). Teachers can meet these by means of their teaching style. Supporting freedom in learning is a vital linchpin for developing intrinsic motivation for learning (Kusurkar, 2012).

3. Windesheim honours learning environment

The Windesheim Honours learning environment consists of eight characteristics which support learning by honours students through: (1) multidisciplinary connections; (2) creative productivity; (3) authentic assignments; (4) personal learning journey; (5) social responsibility; (6) concept of giftedness; (7) learning communities and (8) personal leadership. These eight characteristics are input for the content and design of the honours programme and are based on both scientific research and application of this knowledge in the day-to-day environment of honours education within Windesheim UAS since 2007, when we started developing honours education. All honours education at Windesheim UAS meets the eight characteristics of the honours learning environment, whereas the content can differ from one programme to the next.

Within the Honours learning environment a crucial role is allocated to its participants who interact and collaborate with each other in the environment. The characteristics are not about the physical learning environment, but about the behaviour and attitudes needed from the teachers, students and other people from outside the university and ways of co-creation between different actors.

In figure 1 all characteristics are summarized in the model of the Honours learning environment.

Figure 1: Model Honours learning environment
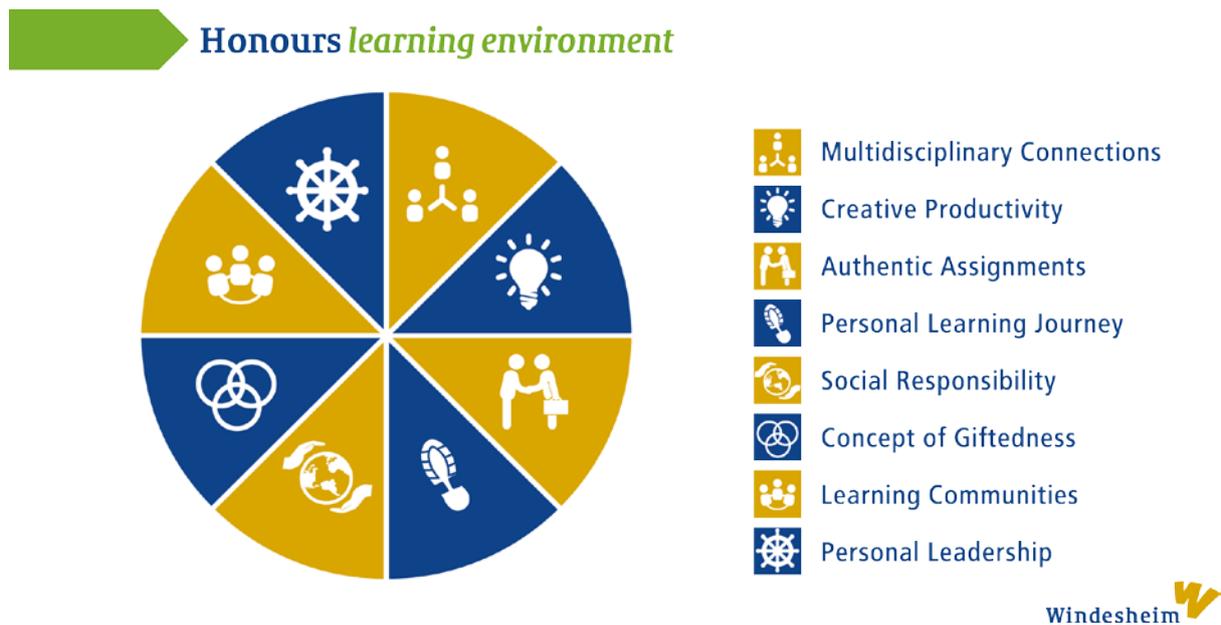
Source: Kingma, Meijer, Veltman, & Zwier, 2016

Below a brief description per characteristic is given. For all actors (students, teachers and external professionals) a suggestion of desired behaviour, attitude or skill to fulfil the characteristic is worked out. Furthermore, all characteristics are explained by an animation which can be reached by clicking the link. All animations are directed to teachers.

Characteristic 1: Multidisciplinary Connections

Multidisciplinary Connections
In an honours learning environment there is a broadening of cooperation in comparison with the student's own study programme, either in a multidisciplinary or an international context (Jansen & Suhre, 2015; Janssen, 2017; Veerman, Kingma, Van Alphen, Smits, & Jukema, 2017). Multidisciplinary connections are important to solve complex problems. The synergy between different backgrounds who bring in views from different disciplines combined with personal qualities and talents is key to come up with solutions for these problems. People in different professional roles get the opportunity to rub against sectors and execute different tasks. Broadening one's own work field, while preserving one's own professional identity and contributing to education or professional training. Internationalization can be part of the multidisciplinary connections but is not absolutely necessary.

Teacher
- Creating space and time in order to be able to give a lot of attention to critical and independent thinking, and role-modelling this
- Searching for various ways and forms to bring in different points of view

- Challenging students to put in, to fill up and to empty their baggage of knowledge and experience again, when working with other approaches and methods of working
- Asking students about the underpinning of their viewpoints on why things are or aren't working
- Building in room to get to know each other's backgrounds
- Facilitating connection to each other.

Student
- Curiosity about different approaches
- Gaining consciousness of similarities and differences in types of approach by different study programmes
- Openness to and wonder about 'never having thought of that'.

External professional
- Bringing in strategic problems that demand an approach from multiple perspectives.

Characteristic 2: Creative Productivity

Creative Productivity

In an honours learning environment, it is not only about generating new ideas, but also about analysing the usability of these ideas and delivering advice for implementation (Sternberg, 2003). The skills actors use to be more creative are learning by designing, using a design cycle, design thinking and making prototypes. All skills are used iteratively to assure progressing step by step. Another factor can be an analysis up front and broadening the research. Assignments are open-ended and students may come up with something the teacher doesn't know about yet.

Teacher
- Challenging students to take an extra step in research, implementation and measuring effectiveness of implementation
- Within the assignments building in the option for students to come up with their own ideas on content and approach
- Within the assignments building in activities during which students investigate issues and underpin their findings with facts, arguments and reasoning
- Within the assignments using activities that lead to creating, comparing and balancing.

Student
- Not satisfied with the first result
- Critical reflection
- Creative thinking
- Coming up with one's own ideas is allowed.

External professional
- Being open to the unknown, offering room to experiment.

Characteristic 3: Authentic Assignments

Authentic Assignments

Intrinsically motivated students like working on assignments for a real organization. Authentic assignments are an important source of nourishment to keep feeding intrinsic motivation (Allen et al., 2015; Cremers, Wals, Wesselink, & Mulder, 2016). Meaningful and real assignments where the results can really be used in practice because there is an urgency, motivates the assignment giver and taker. The assignments should be innovative and open-ended with room for ownership by the student.

Teacher
- Entering into cooperation with real organizations and especially from other professional fields than just the student's own field of training
- Using assignments in such a way, that students can work on them for a longer period of time in order to achieve more depth and establish a situation of being allowed to learn from trial and error
- Taking the experience from the way of working with the assigning organizations in one's design and translating it into a hybrid environment
- Using manners of cooperation in which a broadening of perspective is searched for
- Finding a balance in the method of guidance between the autonomy of the student while working on the assignment and supporting this autonomy by facilitating real learning
- Together with the assigning organization fine-tuning the freedom and room for the students to learn and – for the benefit of organization – the quality of the final result
- Facilitating a win-win situation together with the assigning organization and the student.

Student
- Students have the responsibility for rounding off the assignment, for the sake of which the organization must be heard, the problem must be closely defined and both parties must have committed themselves to the final product.

External professional
- Willingness to manage expectations for the learning process of the student, the quality requirements of the final product and the cooperation with Windesheim staff
- Offering room to students to be allowed to learn, experiment and sometimes also to fail.

Characteristic 4: Personal Learning Journey

Personal learning journey

In an honours learning environment students are given the room to discover, to develop and to put in their own strengths and discover true and full individual potential. The student-teacher relationship and personal coaching, as well as working on their personal development in small groups of fellow students, contribute to this. The relationships are characterized by a high amount of trust and openness (the whole person). Guidance within the honours learning environment requires a lot of attention to the talents and need for extra challenge of the students. Via a presentation about their personal learning journey, the student can profile himself professionally and personally (Rath, 2007; Van Eijl & Pilot, 2016). It starts with commitment to actively get to work with one's qualities and possibilities of growth. The result is to become conscious of one's own qualities and possibilities of growth and self-knowledge and even express them. Fascination, passion and sparkling of the eyes caused by finding one's intrinsic motivation is a beautiful result of this.

Teacher
- Is genuinely interested in getting to know the student and what drives him
- Gets satisfaction from seeing the personal learning journey of the student
- Is open and accessible to the student.

Student
- Being open to discovering who one is
- Being open to and having the courage to experiment
- Investigating and understanding what is meaningful to you
- Committing to personal growth.

External professional
- Acts as a critical friend who gives feedback based on questions by the student and on the consistency in the student's story with the purpose to get ahead step by step in the question of 'how can I improve'

Characteristic 5: Social Responsibility

Social responsibility

With its varieties of honours programmes, Windesheim aims to encourage students "to question the status quo" in order to contribute to the world of tomorrow and to share in the responsibility for the common good. That means that honours education is focused on creating value for/in society, leadership, entrepreneurship and innovation. Daring to ask fundamental questions about general assumptions in society and systems/structures, such as those concerning sustainability and social justice is part of this. What systemic changes in social structures – economic, social, political – are necessary for a sustainable, inclusive society? And what changes are required at an individual level in our thoughts and actions, in doing and being? Responsibility in society is especially important when forming a strong

sense of purpose: the student defines his own purpose that exceeds his own individual wellbeing (Clevenger-Bright et al., 2012). Students can create value in the broad sense of the word (people - planet - profit).

Teacher
- How can you tell that our students are societally responsible?
- Ask students about how they want to make the difference.

Student
- Being open to and curious about societal problems and wanting to contribute to solving them
- Treating each other with respect.

External professional
- In consultation, working on societal themes that matter

Characteristic 6: Concept of Giftedness

Concept of giftedness

Renzulli (2005) expresses creative-productive talent in the Three-Ring Conception of giftedness by means of the combination of the following three personality traits: a score above average on professional abilities, perseverance and creativity. The honours environment feeds all three (Renzulli, 2005). Wanting to make the difference more than the group you belong to metacognitively, analytically or in one of the other forms of intelligence (Gardner, 2004) are examples of scoring above average. It is especially the combination of the three personality traits of Renzulli where giftedness is seen.

Teacher
- Tuning assignments to the common ground between the three personality traits
- Optimally designing the honours learning environment to keep developing the student's full potential.

Student
- Distinguishing oneself from peers
- Discovering one's full potential
- Showing one's motivation to make the difference.

External professional
- Challenging students to move a step forward.

Characteristic 7: Learning Communities

Learning Communities
In an honours learning environment students work together with fellow students, teachers and external parties in a learning community. The community offers the safety to experiment and stimulates room for the autonomy and personal growth of the student (Coppoolse, Van Eijl, & Albert, 2013; Wolfensberger, 2012). One key element is that the actors within the community are highly motivated and open minded. The learning community needs to be a safe environment where actors have faith in each other. Learning and developing is not only dedicated to students. Teachers and assignment givers learn as well.

Teacher
- Creating situations in which mutual learning and making mistakes are possible
- No traditional teacher-student relationship, but one based on equality
- Using classroom activities, methods of guidance and questions that feed and stimulate curiosity.

Student
- Wanting to share and connect things together with peers
- Being curious for the other's perspective
- No traditional teacher-student relationship, but one based on equality.

External professional
- Openness to learning together.

Characteristic 8: Personal Leadership

Personal leadership
Ambitious students show a pro-active attitude and take charge of their own development within the honours learning environment, as well as outside it, while continually building on their personal learning journey (Clark, Osterwalder, Pigneur, & Van der Pijl, 2012; Rath, 2007). Being one's own director and being in the driver's seat inside the secure honours learning environment makes students see, create and use opportunities inside and outside the honours learning environment.

Teacher
- Asking different types of questions, not settling for the first answer, coaching
- Showing a genuine interest in what drives and challenges the student to take extra steps.

Student
- Setting, implementing and executing one's own objectives, learning outside of one's comfort zone, developing personal development skills
- Daring to keep challenging oneself

- Daring to look at oneself critically
- Creating one's own network to continue to feed one's personality
- Spotting people who can help you along in your personal development
- Daring to ask, daring to experiment and daring to fail.

External professional
- Being an inspiration
- Being prepared to enter into relationships based on equality.

4. Concluding remarks

In 2016, the honours learning environment was implemented within Windesheim UAS. It is used to develop new honours programmes and to review current honours programmes. In 2018 we will arrange a peer review by and with all honours programmes in order to evaluate how these characteristics support the learning of honours students and how it can be improved.

There are three concluding remarks we would like to share:
1. The honours learning environment is designed as a model for teachers to think critical about their behaviour and attitude in education in order to challenge motivated and gifted students who want to do more than the regular programme offers. The result is a model that invites teachers to a discussion about the different aspects of an honours environment. But besides the teachers, it can also be used by other actors as well. Students are invited to think about the honours programmes and their own role. An improvement can be to add good practices and more research aimed at students or external professionals. Especially the characteristic 'Concept of giftedness' could then improve.
2. The model describes the characteristics of an honours learning environment where three different actors meet. There is no pinpointing to one specific actor. This makes the model impersonal and the description invites all actors to think critically about their role in order to make the learning experience within the honours learning environment a success.
3. The eight characteristics of the honours learning environment are not fixed and we expect that they might provide enough freedom to experiment because the focus is not on the content of a programme, but on the characteristics of an honours learning environment. Learning experiences in this environment might have a radiation effect on regular education when talking about what the application of a characteristics might mean for the context of regular programmes.

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Note

Which factors play a role in the development of honours students to become professional leaders?

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1. Introduction

The world is facing fundamental issues that call for new insights and solutions (Scharmer & Kaufman, 2013). These issues make that education is no (only) longer sufficient when educating people to find their way in the existing system, but also shows the need to invest in people who are interested in and want to think about new ways: professional leaders. A professional leader manifests leadership based on expertise and knowledge of the own profession (Plas & Crijns, 2010). Leaders are the kind of people who love a challenge, who discover that old ways no longer work and who do not become insecure of the strange, uncertain and challenging (Bain, 2012).

The properties of professional leaders also become apparent in research on distinguishing features of honours students: they have higher intrinsic motivation (Kazemier, Offringa, Eggens, & Wolfensberger, 2014; Wolfensberger & Offringa, 2012), possess more cultural empathy and open mindedness (Kool & Wolfensberger, 2014), are more extroverted and conscientious (Pullen, Griffioen, Schoonenboom, De Koning & Beishuizen, 2014) and proactive (Banis, 2014). In honours education there is more space for students to make their own choices in their education.

The current research was part of a course that was offered for teachers involved in honours education at Hanze University of Applied Sciences in Groningen, the Netherlands ('A Teacher's Road to Excellence'). The challenge was to explore aspects of honours teaching and ways to develop honours teaching. In honours teaching an important role is being a coach. My aim was to find out more about the question how an honours coach could support the realisation of an important aim of this kind of education: the personal development of students to become future leaders in their field of work. In education it is still fairly unknown where coaching should focus on when it comes to the development of professional leadership qualities. Therefore, I wanted to explore the factors that contribute to becoming a professional leader.

Methods

This qualitative research is built on open interviews with honours students (n = 10) at Hanze University of Applied Sciences, that were nominated by a teacher because they seemed to show obvious professional leadership. The assumption was that the personal stories of these students could uncover factors that formed them to become who they are today. During the interview relevant experiences such as: youth, school career, important events or people, results in school, sources of inspiration, important events, values and goals, successes and setbacks were explored. All interviews were recorded and transcribed. On bases of open coding the interviews were analyzed to find patterns in the personal stories of the students.

Results

The results showed remarkable resemblances in the stories of the respondents. The age of all participants in the research at the start of their study at a university of applied sciences (hbo in Dutch) is a number of years higher than average students. Most students went through "deviant" school careers, for example: a start in the pre-vocational secondary education and via a detour to higher education, a discontinuous high school career, or through pre-university education (vwo in Dutch) and research university to a university of applied sciences (hbo). Most important for the aim of this research: each respondent mentioned decisive personal events, experiences or persons which led to a conscious choice, waking up of certain motivators or the realization of own capabilities and qualities. Examples include:

- One respondent developed from a confrontation with severe school bullying through the discovery of being autistic to a transformation from a weakness to a strength (raising awareness for autism).
- Being raised in foster families and thereby continuous confrontation with new experiences led to learning to use the ability to deal with new experiences in a constructive way.
- A negative experience of having to go abroad on internship with poor language skills and an accident that forced complete reorientation led to a new start where learning from new situations became a challenge.
- A personal encounter with god gave the impulse to strive for social justice, especially in working with refugees.
- Being raised in a patchwork family created the wish to connect and deal with different people, cultures and environments.
- The experience of being a good student in high school with paternal pressure that was followed by a period of poorer achievements due to contact with "bad friends" led to discovering the intrinsic motivation to learn and develop: the discovery of own qualities by faith in and trust of teachers.
- Counseling on university transformed a negative start with school bullying and calculation problems into the discovery of room for personal choice.
- The early loss of father led to low self-esteem, but through an internship abroad and an intensive love affair the respondent regained self-confidence.
- The stimulus for learning came from a geography teacher who opened the world and the wish to explore.

Conclusion
The development of each respondent is strongly influenced by specific events, experiences or people. From the personal story of each of the respondents it seems clear that the positive development speeds up when someone becomes aware of his/her personal motivators and found a way/ ways to connect to them.

Discussion
The results of this small sample seem to show that personal motives are related to personal strengths. Since the research is based on a very small and selective sample conclusions are speculative. As a result for teaching practice it points in the direction of the necessity of gaining insight in the personal story of a student to be able to support and encourage students in the development of professional leadership. This insight could be a starting point to help the student to recognize personal motives and strengths. This seems to be in support of a method like the strengths approach of Buckingham and Clifton (2016). According to this approach, people are more successful if they reinforce and exploit their strengths and put no unnecessary effort in improving their weaknesses. On this basis, a student may be encouraged to explore situations and contexts to effectively use the strengths and to find ways to minimize the damage of weaknesses.

Acknowledgments

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Note

Teaching clinical reasoning and decision-making skills by visualizing the thought-process: an interdisciplinary gaming project involving honours students from veterinary and computing sciences

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1. Introduction

Clinical reasoning (figure 1) is the capability to link one's own observations and interpretations to medical knowledge, thereby rendering this an essential skill to master in professional veterinary and medical health sciences (Delany & Golding, 2014). Teaching and learning this skill can be challenging for both teacher and student, because of the complexity of the thought process (Delany & Golding, 2014). Moreover, the limited availability of real patients necessitates teachers to rely on less-realistic paper casuistries for practicing purposes. However, serious games, which are designed for the simulation of real-life situations, may offer a solution (Johnsen et al., 2016).

In health sciences, serious games can be used to provide students with the opportunity to practice their clinical reasoning and decision-making skills in an accessible, safe and authentic environment (Delany & Golding, 2014; Johnsen et al., 2016). Several of these games have already been developed and used in the medical sciences (Delany & Golding, 2014; Johnsen et al., 2016; Koivisto et al., 2016; Graafland, Schraagen & Schijven, 2012), but in veterinary medicine, their availability is scarce. As a result, an interdisciplinary serious gaming project was set up to develop a program with a group of veterinary and computing science honours students.

Figure 1. An overview of the clinical reasoning process

Clinical reasoning
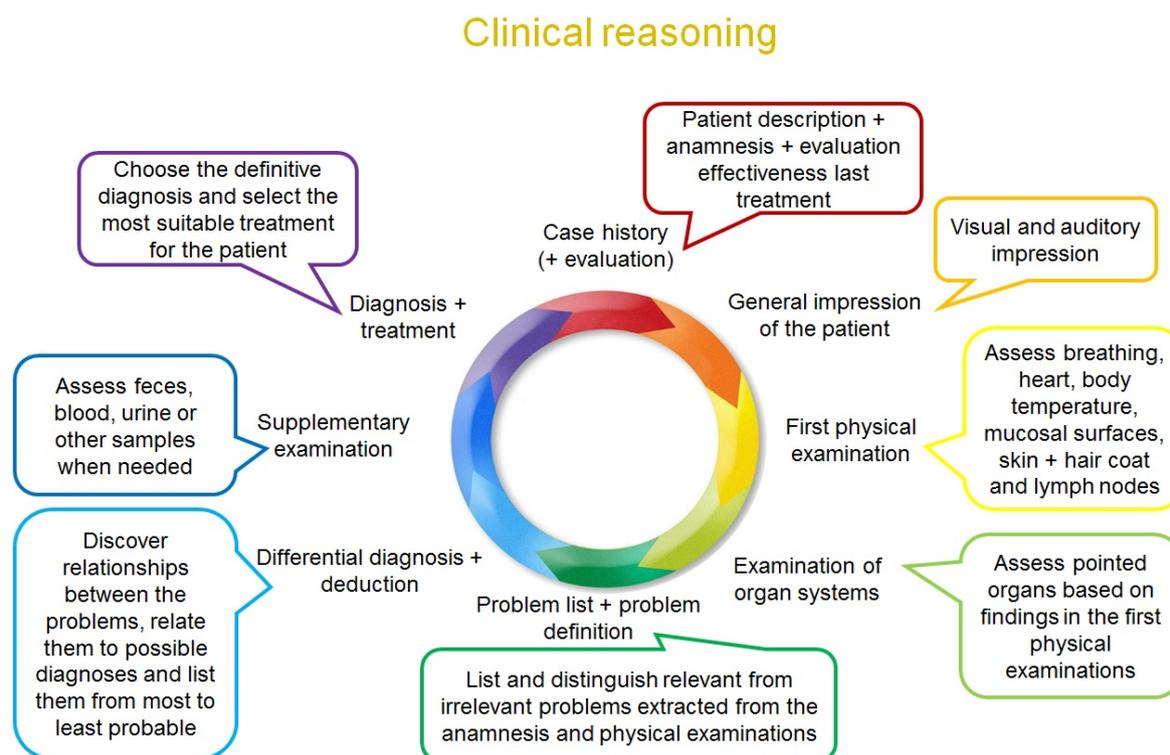
Source: Based on Mather (2013) and the Course Information 'Lijn 3', Faculty of Veterinary Medicine, Utrecht University, the Netherlands

The project aimed to develop a serious game for veterinary students to practice their clinical reasoning skills using interactive casuistries, while at the same time offering the participating students an opportunity to broaden their horizon and gain insight in the work processes of a different discipline, deepen the veterinary students' knowledge regarding the structure of the clinical reasoning process and familiarize the computing science students with the process of designing software for a commissioning party. During the project, each group was assigned its own tasks, whereby the veterinary students were primarily responsible for writing a case script and testing of the functionality of the game, while the computing science students (aided by students from the art faculty) were responsible for software development and lay-out of the program.

This project was done in an honours setting since the development of the game and its software required the input of students to correspond with the knowledge, expertise and insights of the students. Thinking about the design and contents of the game challenged the honours student, corresponding with our vision on honours programs in veterinary medicine, in which we want to stimulate creativity, ingenuity and interdisciplinarity. Furthermore, the project added extra content to the thinking process and patterns in the education of clinical reasoning.

2. Methods
Development of the program took place using the MoSCoW method (Miranda, 2011), starting with the determination of the minimal requirements for a working and accessible

game (so-called 'Must haves'). In addition, 'Should haves' (i.e. desirable, but not necessary to obtain a functional product), 'Could haves' (i.e. requirements that are only included if time permits) and 'Won't haves' (i.e. requirements that will not be incorporated in the current project, but can be of interest for further development) were drawn up. During weekly to bi-weekly meetings, the veterinary and computing science students got together with teachers from both disciplines and educational advisors to discuss the design and development of the program and provide feedback on each other's activities. Computing science students furthermore visited the veterinary medicine faculty and participated in lessons to help illustrate the process.

3. Results
Six months after the start of the project, the first prototype of the serious game software was completed. This software, called 'Furo', allows teachers to program new clinical reasoning cases that allow the students to systematically go through the different steps of the clinical thought process, while receiving feedback following each completed step. Although further testing and development of the software is needed, this initial prototype provides an excellent example of the possibilities that serious gaming may provide to educators and students to facilitate teaching of clinical reasoning, as well as the advantages that the participation in an interdisciplinary project may have for the professional development of the (honours) student.

4. Discussion
One of the major challenges during this project was to attune the technical languages and working methods used in the different disciplines. This was greatly facilitated by having the students from computational science take part in the lectures at the veterinary faculty, helping them to visualize the thought process of clinical reasoning. Their technical break-down of the process in turn helped veterinary students in their understanding of clinical reasoning. Moreover, the veterinary students' understanding of the clinical reasoning process was greatly enhanced by having the students design the case plot, including the questions, correct answers and distractors.

Other challenges faced during the project included problems of a logistical nature such as planning of the meetings, as many students had different class schedules. Given the size of each of the groups, it was quickly decided to hold weekly meetings at one of the two faculties, whereby only a small (variable) delegation of students from the other faculty was present to sit in on the meetings of the other group and give updates to the other groups. For this purpose it was essential to appoint group leaders for each group. Appointing group leaders was furthermore found beneficial for planning and communication, which were both found to be key factors to enable streamlining of the process, as both groups were highly dependent on each other's results. When one group didn't meet their milestones, the other group also couldn't continue. Group leaders furthermore ensured division of the work among smaller working groups, with each group member having their own responsibilities and being aware of that of others, which enabled good progress to be made.

It was valuable to work in an honours setting during this project. The added value of the setting was characterized by inter alia creative solutions, e.g. by the returning of the frames with the pet-owner in the slot-phase to round up the game, in order to be able to visualize

all phases of the clinical reasoning process within the limited available time. Other advantages of the honours setting, in comparison with a setting of students from the regular curriculum, were the quick understanding of the information provided by the other discipline. Besides, since honours students are critical thinkers, this setting created a continuous critical evaluation of the encountered problems, which in turn led to quick solving of the problems. Another important educational aspect for the honours students was the interdisciplinary collaboration; they had to learn how to make certain issues understandable for the other discipline. Furthermore, organisation of the meetings and working and discussing in an efficacious way contributed to the professional attitude of the honours student.

5. Conclusions
The participating veterinary students indicated that they got more insight in the clinical reasoning process and both veterinary and computing science students mentioned that they got a better understanding of the work of the other discipline. The students from the regular curriculum testing the program stated they better remembered the subject matter. The game is currently in a test phase, but is further developed from 2016 onwards. New cases have been created already and the possibilities to make English versions are currently under discussion.

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Paper

Honors programs as forerunner for 21st century skills?

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Abstract

Honors programs are frequently regarded as inspiring for redesigning curricula in higher education that incorporate 21st century skills. This explorative study focuses on eliciting students' perceptions regarding their learning gains related to these skills in honors programs. Results demonstrated high learning gains. Moreover, based on students' insights, each honors program can be characterized by its own profile regarding the type of 21st century skills. Further, in two honors programs students were asked to compare their learning gains with the perceived learning in their regular program. The majority of students emphasized that their skills were highly promoted in their honors program in comparison with their regular program. Finally, students suggested varying possibilities to incorporate honors activities in their regular program. However, from a curriculum design perspective, adjustments are needed to fit the regular groups of students.

Keywords: honors program, 21st century skills, biology, interdisciplinary, Holocaust

1. Introduction

Are honors programs forerunners for 21st century skills? In interviews in a preceding project, 'The Honours Experience' (Van Eijl & Pilot, 2016), some honors students mentioned that honors programs are the future for education. Sometimes they have learned typical 21st century skills to a much higher degree than in their regular programs. For example, a national survey on the effects of honors programs in the Netherlands (Allen, Belfi, Van der Velden, Jongbloed, Kolster, Westerheijden, Van Broekhoven, Leest & Wolbers, 2015) showed that honors students at research universities experience a relatively strong development of their research and presentation skills and also ambition and perseverance

compared to regular students. Honors students of universities of applied sciences experience showed a relatively strong development of their leadership competencies. To get a better picture of these important skills, we started a project to explore to what degree honors students gained relatively more 21st century skills in their honors programs compared to their regular programs. As a preparation we organized a workshop at the International Honors Conference at Windesheim University of Applied Sciences (UAS) in Zwolle, The Netherlands (June 2017), to present the first results and to discuss them. An additional aim of this project is to discover what students think about incorporating honors activities (involved in learning these skills) into the regular program. Three extra-curricular honors programs with participants from the Netherlands, Belgium, USA, Indonesia, Ireland and Nigeria, joined this project: the Biology honors program of Utrecht University, the Interdisciplinary honors program of the KU Leuven and the International honors summer school Camp Westerbork of Hanze University of Applied Sciences. Questionnaires and observations were used to explore their learning gains and ideas about these skills.

2. What are 21st century skills?

21st century skills are often mentioned to describe what students will need to function in and contribute in their professional activities in the 21st century. These are generic skills with related knowledge, insight and attitudes (Thijs, Fisser & Van der Hoeven, 2014). They are considered necessary in a society that is rapidly changing with computers and technology replacing a lot of human labor, creating new opportunities, digital intelligence (big data), becoming more global and bringing new ethical dilemmas (Colvin, 2015). International researchers (supported by Microsoft, Cisco and Intel) have studied these skills for primary and secondary education and reported on these in the KSAVE-model (Knowledge, Skills, Attitudes, Values and Ethics) (Binkley, Erstad, Herman, Raizen, Ripley, & Rumble, 2010). In the Netherlands this was elaborated by Boswinkel & Schram (2011). A Utrecht-based research group on 21st century skills of the Freudenthal Institute, Utrecht University (Universiteit Utrecht, Onderwijsadvies en Training (FSW), 2015) made a model for secondary and tertiary education with the following categories: creativity, problem-solving, collaboration and communication, ICT literacy and self-regulation. Some universities have already incorporated these skills in their policy plans, for instance Windesheim University of Applied Sciences:

- Social and cultural skills, personal and social responsibility, and cultural awareness;
- Critical thinking and analytical skills;
- Demonstrating leadership and taking responsibility;
- Being innovative, inquisitive, creative and flexible;
- Initiative-taking, spotting opportunities and having an entrepreneurial spirit;
- Co-operation, interpersonal skills and problem-solving mindset;
- Communicative, effective, accurate, using modern technology to good effect;
- Being able to find, use and evaluate information and effectively use modern technological aids.
 (Windesheim University of Applied Sciences, 2014, p. 12).

3. Overview of 21st century skills

In the aforementioned model of the Utrecht research group of the Freudenthal Institute, other models can be recognized but it is still concise. However we made some adaptations in the names of categories to be closer to the reality in Dutch honors education. So the self-

regulation category has been renamed 'Personal leadership' and 'Crossing borders' became a category of its own. An extra sixth category 'Skills yet unknown' has been introduced to take care of unclear and unexpected skills that may also be needed later in this century. These six groups of skills are visualized in figure 1. These skills are not completely separate from each other. The skills 'giving and receiving feedback' are for instance related to 'communication', but also to the development of personal leadership and teamwork.

Figure 1: Scheme of six categories of 21st century skills
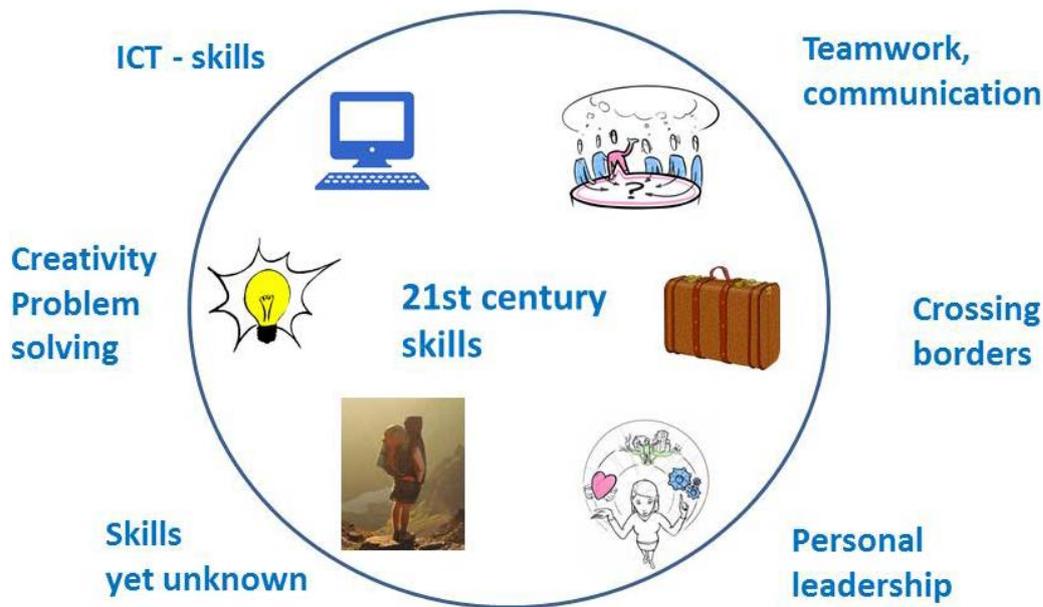
Source of scheme: the authors of this publication
Source of pictures: Pixabay, Unsplash (public domain); Coachcenter (reprinted by permission)

3.1 Explanation of each category of 21st century skills

Creativity and problem solving: The ability to create and optimize new ideas, to work in an innovative way, to think critically, to identify, analyze and solve problems and to design something new. (Source picture: Pixabay)

Teamwork and communication: the ability to work in a team and to communicate effectively. (Source picture: Coachcenter, reprinted by permission)

Crossing borders: the ability to work with people from other disciplines and/or cultures/nationalities and the ability to develop a different perspective. (Source picture: Pixabay)

Personal leadership: the ability to arrange your own life and work, to take initiatives, to work on personal development and integrity, and to take responsibility for your own actions. (Source picture: Coachcenter, reprinted by permission)

ICT-skills: the ability of effective and efficient use of technology and information, and to understand influences of artificial intelligence on a profession. (Source picture: Pixabay)

Skills yet unknown: These skills refer to future developments in this century we are not yet aware of and skills that are overlooked until now or only identified incidentally. Some other inventories also emphasize flexibility, adaptability and versatility (EUROlocal, 2017), productivity (including entrepreneurship) and risk-taking (Voogt & Roblin, 2012). (Source picture: Unsplash / Danka & Peter)

4. Aims and method

The aim of this study is to explore the opportunities for incorporating 21st century skills in curricula of higher education in the coming years. Based on literature about expected changes in the labor market for graduates of higher education in this century (Colvin, 2015), we think that it is needed to redesign the goals and teaching-learning activities in the curricula of many or all programs in higher education, but until now there is no clear and precise insight in what changes should be made in the many different disciplines. For this reason a first exploration is needed to better understand the problem of what knowledge, skills and attitudes will be necessary in the 21st century curricula in higher education. The results of this exploration can provide a starting point for more detailed and quantitative studies in the different disciplines and cultural contexts. This leads to two goals:

1. to explore the degree in which honors students were stimulated to learn 21st century skills in their honors programs and to ask honors students to compare this to their regular program.
2. to discover what honors students think about incorporation of honors activities (involved in learning 21st century skills) into their regular program.

We focused in this exploration on teachers and students of honors programs in the Netherlands, because we found many curriculum goals, activities and experiences that were linked to discussions in the literature about 21st century skills and the future of the labor market for graduates of higher education in these programs in a previous study. Honors programs are also considered as laboratories for educational innovation in higher education (Wolfensberger, Van Eijl & Pilot, 2012), so in these programs one might expect to find relevant cases and experiences.

From a previous study, we chose three relevant cases to prepare a workshop on the International Honors Conference at Windesheim UAS in June 2017. Three cases were considered enough for this first exploration. We asked the teachers in the three cases to describe the main characteristics of their course in this perspective, and to ask their students some questions about their involvement and learning gains in 21st century skills after the course. In the first two cases the students answered by way of a questionnaire, in the third case this was impossible. Instead data gathering was done by the teacher, based on the observation of the learning process and the reflection documents of the students at the end of the summer school. The questionnaire was developed specifically for this study by the authors, inspired by the models of section 2, focusing on the goals of this study and adapted to the context of the cases and the expected experiences of the students (see tables 1 and 2 for the questions in the questionnaire regarding 21st century skills).

Because the number of students was low in these cases, we asked all students to answer the questionnaire. In case 1 this involves the students of academic years 2015-2016 and 2016 – 2017. In the other cases this was 2016-2017.

Data analysis was done for each case separately: case 1 and 2 quantitatively to calculate weighted averages, in order to find what skills students considered (most) important. Because the cases were intentionally quite different, we did not intend to compare the data of the cases.

The qualitative analysis of the data of the cases was done by the first two authors, focusing on the goals of this study. After reaching consensus, the discussion was continued with the other authors, which led to minor changes and final agreement about the results and conclusions.

5. Case descriptions

Before turning to the results of the data collection among students, we first describe the main characteristics of the honors program Biology (UU), the Interdisciplinary honors program of KU Leuven (two courses) and the Summer school Hanze UAS, in relation to 21st century skills.

5.1 Case 1: The honors program Biology at Utrecht University and 21st century skills
During their first honors year, sophomore students from the honors program of Biology at Utrecht University (the Netherlands) work on a complex project. This project often results in a commercially published book or a comprehensive website. After the start of the project, the teachers no longer give feedback to the students during the further process (only in case of emergency). However, they provide 'just in time' modules, for example about critical thinking and ethics. In addition, students can consult experts on their own initiative. Many important 21st century skills are addressed: collaborating intensively, communicating clearly, arranging effective meetings, developing leadership skills, developing creative, innovative and critical thinking and reflecting. In addition, the task is also a prelude to a piece of education that students have to design and deliver to freshman biology students about the content of their project topic. The group size is 12-19 students. This large group project is a crucial part of the honors program. The task is so complex that students have to work together intensively, divide tasks and jointly take many decisions in order to arrive at a successful result. During this project they should be able to rely on each other. Students have to perform all the activities necessary to produce the book. The project is strongly student-led, and students assign themselves tasks necessary for finishing the project. The assignment comprises an entire academic year, starting in September and finishing in May/June as an extracurricular activity (Wiegant, Boonstra, Peeters & Scager, 2012). At the end the students organize a symposium where they present their book.

5.2 Case 2: The interdisciplinary Honors program at KU Leuven and 21st century skills
The interdisciplinary Honors program on 'evil, retribution and forgiveness' at the KU Leuven (Belgium) is an extra-curricular program consisting of two courses of 3 ECTS points, with one course in each semester (October-January; February-June). The program is meant for about 12 students at the KU Leuven who follow a regular bachelor program (last stage) or master program, within the four faculties of Theology and Religious Studies (1 student), Philosophy (2), Law (3) and Social Sciences (4).
The first course is called 'Conceptualizing evil, retribution and forgiveness', the second course 'Dealing with evil, retribution and forgiveness'. The first part is more centered on conceptual thinking on evil and forgiveness; while the second part includes theoretical reflection as well as concrete involvement in social organizations working on these topics. Various learning activities are scheduled within these courses: excursions (to places such as a museum for remembrance of the Holocaust or to the office of Human Rights Watch); group discussions and close reading of texts from various disciplines; presentations of summaries and reflections on book chapters; keeping a blog together; writing an opinion article for a

journal; a panel discussion with professors of various disciplines; a film seminar; and reflection about evil and forgiveness in the personal lives of the students.

5.3 Case 3: The Honors Summer school Camp Westerbork at Hanze UAS and 21st century skills

Hanze University of Applied Sciences (the Netherlands) and Memorial Centre Camp Westerbork have been working together in the last few years in organizing honors projects that connect lessons from the remarkable history of Camp Westerbork to issues and problems of today's society. One of the projects in this cooperation was a summer school on Holocaust Remembrance in which American and Dutch students worked together in a project connecting past and present day issues in society. In total 11 honors students participated in this summer school, coming from Colorado School of Mines and Texas State University (USA) and Windesheim University of Applied Sciences and Hanze University of Applied Sciences (the Netherlands).

The purpose of the summer school was to further develop personal and social skills of students by providing a project in which international cooperation, working from different perspectives and social responsibility are key components. This was done by connecting World War II history with present day developments and their impact on modern day society. In the summer school students were provided with the opportunity to collaborate with an international cohort to study Holocaust history. Students used these "lessons from the past" to examine, investigate, and critique problems in today's societies concentrating on the theme of bystanders. They created their own project in relation to these complex problems where they could use their initiative and creativity.

Before the actual summer school started, students did research into Holocaust history. This was facilitated with online lectures, readings and assignments. The summer school itself was a 17-day program with excursions to several Holocaust sites in the Netherlands and Germany as well as working on projects on location at Memorial Centre Camp Westerbork. In small groups they created a photo exhibition and a Ted Talk-video about bystanders in the past and what it means to be a bystander in the society of today. The capstone of the summer school was formed by the final presentations of each team's projects. In the summer school an experienced honors teacher worked together with a representative of Memorial Centre Camp Westerbork, together acting as coaches for the participating students.

6. Results

6.1 Results of the questionnaire about 21st century skills

We asked the students who participated in the honors program of biology in Utrecht (case 1) and the interdisciplinary honors program in Leuven (case 2), first if these programs stimulated them to develop 21st century skills. For the Summer school of Hanze UAS (case 3) we rely on teacher observations also including the results of a reflection task performed by the students at the end of their summer school. For cases 1 and 2, table 1 gives an overview of their responses in weighted averages scores.

Table 1. Honors programs stimulating development of 21st century skills

Question: Did the honors program stimulate you to….? Responses by students (scale: 0= no gain; 1 = a little; 2 = moderate; 3 = remarkable*).			Teacher observations
Questions:	Case 1: Honors Biology (Utrecht). N=29**	Case 2: Interdisciplinary Honors (KU Leuven) N=6***	Case 3: Summer school (Hanze UAS) N=11****
1. Problem solving			
1. think about real world problems:	medium, 1.90	very high, 3.00	high
2. deal with complex problems:	medium, 1.90	very high, 2.80	high
3. do research that exceeds the regular program:	medium, 1.83	very high, 2.40	medium
4. develop your critical thinking:	very high, 2.38	very high, 2.80	high
5. think creatively:	high, 2.14	very high, 2.40	high
6. enhance your problem solving skills:	high, 2.07	medium, 1.60	medium
7. design something new:	medium, 1.97	high, 2.00	high
8. work in an innovative way?	medium, 1.83	very high, 2.40	high
2. Teamwork, communication			
9. work in a team:	very high, 2.83	high, 2.20	high
10. learn in discussion with others:	very high, 2.79	very high, 3.00	very high
11. develop empathy, social skills and social intelligence:	medium, 1.79	very high, 2.60	very high
12. improve your written and oral communications:	very high, 2.52	high, 2.20	high
3. Crossing borders			
13. develop a different perspective on certain things:	high, 2.10	very high, 2.80	very high
14. work with people from other disciplines and/or cultures	low , 1.41	very high, 2.60	very high
4 Personal leadership			
15. take initiatives and go for new challenges:	very high, 2.48	moderate, 2.00	very high
16. give and receive feedback:	very high, 2.48	high, 2.20	high

17. develop your personal and social responsibility:	high, 2.24	very high, 2.40	very high
18. enhance your capacity for self-regulation:	high, 2.14	high, 2.20	very high
19. work on your personal development (who am I, what do I want to be?):	high, 2.10	very high, 2.80	very high
5. ICT			
20. use of social media in team assignments:	very low, 0.86	high, 2.00	high
21. improve computational thinking	very low, 0.86	low, 1.20	low
22. check the quality of your sources on the internet?	low, 1.34	low, 1.40	low
23. enhance your media literacy?	low, 1.28	low, 1.40	low
6. Skills yet unknown: not yet specified			

* Indicative qualifications used to clarify the value of the weighted scores are: very low: 0.80-1.00; low 1.00-1.50; medium 1.50-2.00; high 2.00-2.25; very high 2.25-3.00
**Respondents case 1 were biology bachelor students from academic years 2015-2016 and 2016-2017; 53% in second year and 47% in third year of study. All students were Dutch, except one student from Indonesia.
***Respondents case 2 were 5 males and one female, from different disciplines: Theology and Religious Studies (1), Philosophy (1), Law (3) and Social Sciences (1). Nationality Belgian (3), American (1); Irish (1) and Nigerian (1); bachelor and master students.
****Respondents case 3 were 2 males and 9 females; bachelor students; Nationality: American (4) and Dutch (7).

6.2 Results of questionnaire about coaching and a comparison with the regular program
We also asked the students in case 1 and 2 about the coaching of the teachers regarding stimulating the development of 21st century skills and a comparison between their honors program and their regular program with respect to these skills. Table 2 gives an overview of their responses (questions 24 and 25 in the questionnaire).

Table 2: Coaching and development of 21st century skills, and comparison with regular program; replies for cases 1 (N=28) and 2 (N=5)

Questions	Scale and answers in percentages and numbers			
24 Did your honors coach or teacher stimulate the development of these skills?	not at all	a little	moderate	much more
	Case 1: Biology (UU):			
	7% (2)	14% (4)	68% (19)	11% (3)
	Case 2: Interdisciplinary KU Leuven:			
	0% (0)	0% (0)	60% (3)	40% (2)

25 Did your honors program promote the development of these skills more than your regular program?	not at all	a little	some skills	a lot of these skills
	Case 1: Biology (UU):			
	0% (0)	4% (1)	54% (15)	43% (12)
	Case 2: Interdisciplinary KU Leuven			
	0% (0)	0% (0)	60% (3)	40% (2)

6.3 Results of open questions in the questionnaire
The open questions were:

> 26. Please give one or more examples of the way your honors coach or teacher stimulated the development of these skills.
> 27. Which activities of your honors program may be appropriate for incorporation in a regular program of your university?
> 28. What kind of adjustments on the honors activities are necessary to be able to incorporate them successfully in a regular program? Please give one or two examples of such adjustments?

Results are included in sections 6.4-6.6.

6.4 Analysis of results case 1: Honors program biology (Utrecht University)

Development of 21st century skills in the honors program
According to the students their honors program stimulated the development of the following 21st century skills (very high or high scores in table 1):

- Category 1 (Problem solving): critical thinking, thinking creatively, problem solving skills;
- Category 2 (Teamwork, communication) teamwork, learning in discussion with others, improving their written and oral communication;
- Category 3 (Crossing borders): developing different perspectives;
- Category 4 (Personal leadership): taking initiatives and go for new challenges giving and receiving feedback and (high scores) developing personal and social responsibility, enhancing capacity for self-regulation.

The other skills have medium or (very) low scores.
A large majority of 68% of the students said that their honors coach/teacher stimulated the development of these 21st century skills in a moderate way (table 2, Q 24). A student explains this score as follows in open question 26: 'We got the assignment to create something as a group project. We decided to write a book. The teachers gave the opportunities and the conditions but we had to regulate the process ourselves.'

Incorporation of honors activities in the regular program
Students give very diverse answers to this question (Q27), but nearly all students said some activities could be incorporated in their regular program. Some examples are: 'a module about ethics'; 'reading books, more feedback to each other and yourself, critical thinking'; 'individual projects should be stimulated more'; 'a large (intensive) project in which you

should work together'; 'set up your own project; writing a book! Very educational and really great to do so with a group'; 'reading of popular scientific books'.

However, one student also said 'I don't think any of the activities would fit into the regular program. Adjustments would be necessary.'

Adjustments proposed in case honors activities are incorporated in the regular program:
Students proposed a variety of adjustments (Q28), including: 'making it shorter', 'group projects around feasible assignments', 'more workshops', 'a stricter schedule', 'more supervision', 'not a compulsory course but an elective', and 'lower level'.

6.5 Analysis of case 2: Interdisciplinary program KU Leuven

Development of 21st century skills
Students gave the stimulation of the following skills (very) high scores:
- Category 1 (Problem solving): think about real world problems, deal with complex problems, do research that exceeds the regular program, develop critical thinking, work in an innovative way, design something new;
- Category 2 (Teamwork, communication): learn in discussion with others, develop empathy, social skills and social intelligence, work in a team, improve your written and oral communications, give and receive feedback;
- Category 3 (Crossing borders): develop a different perspective on certain things, work with people from other disciplines and/or cultures;
- Category 4 (Personal leadership): develop your personal and social responsibility, work on your personal development, enhance your capacity for self-regulation;
- Category 5 (ICT-skills): use of social media in team assignments.

60% of the students said (table 2, Q24) that their honors coach or teacher stimulated the development of some of these skills and 40% said a lot of these skills. As one student explains (Q 26): 'The coaches themselves were very active in organizing the program and giving us opportunities to explore. They did not, however, take a leading role in discussing, in the sense that they would not dominate a discussion, rather letting ideas flow freely amongst students once the topic has been launched.'

60% of the students said that the honors program (table 2, Q26) stimulated the development of 'some 21st century skills' and 40% said 'a lot of these skills'.

Incorporation of honors activities in the regular program
Many students thought that some honors activities may be appropriate for incorporation in a regular program (Q27). Examples are 'Group debates with smaller groups and interesting professors about certain societal phenomena', 'Exploring the effectiveness of certain measures and considering whether an interdisciplinary approach to a global issue is more appropriate' and 'I think my regular program may benefit from participation in a socially-engaged manner, which is not encouraged at all'.

Adjustments proposed in case honors activities are incorporated in the regular program
Students proposed the following adjustments (Q 28): 'I think the use of smaller groups, tutorials, is essential', 'the courses should be taught to students as normal course programs', 'making it more known to the students' and 'the program should be scaled up to be

incorporated in a regular program, but I am afraid that it will then lose its added value, also because people will then be forced to participate (even if there is no motivation)'.

6.6 Analysis of case 3: Honors Summer school Camp Westerbork, Hanze UAS, The Netherlands

Development of 21st century skills
Students reflected on the summer school (table 1). They mentioned specifically that their critical thinking and creative thinking, team work, developing different perspectives and developing personal leadership have been enhanced by the program.

Incorporation of honors activities in the regular program (teacher observation)
Although the summer school as a whole cannot be transferred to regular programs, elements of it may be used, for instance letting students work in multidisciplinary groups and working with assignments that require cooperation, creative skills and using different perspectives.

7. Conclusion
In this section, we return to the goals of this study which were introduced in section 4.

Goal 1: to explore the degree in which honors students were stimulated to learn 21st century skills in their honors programs and to ask honors students to compare this to their regular program.

In all three cases, which are by purpose very different, student data show that the learning of 21st century skills was stimulated in their honors programs. Each honors program had its own profile for the type of skills and the intensity of the learning. However, in all three programs one or more skills related to the categories 'problem solving', 'teamwork and communication', 'crossing borders' and 'personal leadership' have high to very high scores. Students don't report high extra learning gains for ICT skills.
In cases 1 and 2 student data show that their honors program promoted the development of some or a lot of 21st century skills. The student data in cases 1 and 2 also show that the teachers/coaches did stimulate them to learn these skills, but to a moderate degree, as one student explains: 'The teachers gave the opportunities and the conditions but we had to regulate the process ourselves.'

Goal 2: to discover what honors students think about incorporation of honors activities (involved in learning 21st century skills) into their regular program.

Most students in cases 1 and 2 said that some honors activities related to the learning of 21st century skills may be appropriate for incorporation in a regular program. A diversity of examples is given for each honors program. For example, the teacher observations in case 3 point to the following element: letting students work in multidisciplinary groups and working with assignments that require cooperation, creative skills and using different perspectives. Most students think that adjustments are necessary.

8. Discussion

If we consider the results of this exploratory project we have a strong indication that the three honors programs stimulate the development of 21st century skills, or a lot of these skills. For cases 1 and 2, we have strong indications that the honors programs promoted the learning of these skills more than the regular programs. We use the word 'indication' because in the honors biology program quite a big group of 29 students (of two academic years) responded to the questionnaire, but in Leuven only 6 students did. The questionnaire was not used in the third case, where we had to rely on the observations of the teacher. The remarkable development of 21st century skills can also be the case in other honors programs elsewhere, but there is a great diversity in programs. So we expect that each honors program will have its own profile of 21st century skills. This can give a rich variety of examples of honors activities that have the potential for the learning of these skills.

It is striking that the development of ICT skills did get only one high score (in case 2). But we had to take in to account that students are growing up with ICT and the honors programs cannot teach them much more on those skills. However, we think that the understanding of artificial intelligence will be a major issue in the coming years, which should, in our opinion, not be underestimated.

In the introduction also 'skills yet unknown' are mentioned. Issues such as dealing with ethical dilemmas ('doing the right thing'), personal integrity and awareness of potential implications of own actions may be important 21st century skills.

As mentioned in section 1, we organized a workshop at the International Honours Conference of 2017 in Zwolle, The Netherlands where these results were discussed. The participants of the workshop agreed in discussion about the relevance of this results. 'Honors programs as forerunner for 21st century skills' isn't only a promise and potential but requires also a way in which honors innovations can be adjusted and incorporated in regular programs. Because honors students are the more able and motivated students within the whole group of students who are engaged in the regular program. The adjustments proposed by the students refer to this point. Previous research (Wolfensberger, Van Eijl & Pilot, 2012) showed that this incorporation is often an informal process where teachers and sometimes students start experimenting with their honors experiences in parts of the regular program. In some universities there is a policy where honors programs are used also as a laboratory of change for the regular program (Wolfensberger, et al., 2012). A problem is that many successful honors innovations in education regarding 21st century skills are only known in a small circle of direct participants. The knowledge of these educational innovations can be stimulating for many others and it is worth to make them available by using the internet, publications and personal contacts.

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Links to the honors programs included in this paper:
Biology honours programme of Utrecht University:
https://sciencehonours.sites.uu.nl/students/biology/

Interdisciplinary honours programme of the KU Leuven:
https://theo.kuleuven.be/en/students/honours-programme

International honours Summer school Camp Westerbork of Hanze University of Applied
Sciences: https://www.hanze.nl/eng/education/summer-courses/hanze-summer-
school/courses/honours-summer-school-holocaust-remembrance/about-honours-summer-
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